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ORIGINAL ARTICLES

PREVENTION OF BLINDNESS AND CONSERVATION OF VISION *

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ADDRESS BY THE CHAIRMAN

We have met to-night for the discussion of a subject of far-reaching interest, that of the prevention of blindness and the conservation of vision.

In a study of the blindness of this country one is impressed by the fact that from a conservative estimate fully 50 per cent. of it is unnecessary and preventable. The question is asked, what are the forms of preventable blindness, and what can be done to protect those who are in danger of being overcome by such a calamity? Broadly speaking, they may be divided into those occurring as a result of accident and those from disease.

The state should pass laws that will militate against those causes of blindness with its fatal consequences, which may so easily and frequently be prevented.

Illinois stands fourth among the states as to the number of blind. There are about 4,000 blind in the state, of whom 12 per cent. are under 20 years of age, that is, of school age. There are about 1,000 blind people in Cook County, but I am confident that this falls far short of the number, as only those are included in the number who are blind in the strict meaning of the term, and there is no record of those unfortunates who, although able to get around by themselves, are devoid of useful vision to such an extent that, being unable to earn a living, sooner or later become a charge on the state.

There are three degrees of blindness:

First, total, or absolute blindness, in which the light sense is totally abolished.

* Read in a Symposium on "The Prevention of Blindness and the Conservation of Vision," at a meeting of the South Side Branch of the Chicago Medical Society, Feb. 8, 1912.

Second, blindness, where vision in both eyes, with proper correcting glasses adjusted, is of so low a degree that fingers can no longer be counted at about 3 feet, but movement of the hand, or moving objects may be discerned.

Third, practical blindness where moving objects may still be discerned at 9 feet, but where the field of vision has become so impaired that no useful vision remains, and the individual goes about with great difficulty.

The conservation of the eyesight of the children in our schools is a matter of vast importance. The foundation of subsequent eye disease is frequently laid in our schools. Defective vision and eyestrain are the causes of many physical maladies, which render the child dull and mentally incapable of performing the ordinary school tasks.

If a community's best asset is its men and women, no pains should be spared to conserve the eyesight of its boys and girls. In a work so important, it is the duty of the school, the home and the state to act together. If any of these fail to carry out its part in this work, the boys and girls inevitably suffer. Parents are anxious that their children should be healthy and vigorous, and very often they are ignorant in the knowledge essential to promoting this wish. A dull, sickly pupil is a heartbreak to any energetic teacher; but the teacher too is frequently unable through lack of special training to locate the pupil's physical limitations. The state is ready to do its utmost for its future citizens, but stands helpless because there are no ways and means of carrying out its good intentions. In the meantime the children bear the burden, and because nothing is done in their behalf, go through life needlessly and heavily handicapped. The ignorance and indifference of the parents and teachers to the visual defects is a menace to the future welfare of these small people. Few realize that such abnormal conditions are serious in the extreme, resulting in dulness, headache, stupidity and other nervous disorders that go to affect the health of our future citizens. Bodily vigor is impossible; if the child survives at all he is but a miserable second-best of what he ought to be. The pity of it is that these conditions go unremedied when a little timely skill and attention would accomplish so much for the sufferers throughout life.

In Illinois, little organized effort is being made to prevent blindness; that is, as compared with what is taking place in such states as New York, Massachusetts, Pennsylvania and Ohio, where organized effort has been going on for some time, and where the general public has been aroused to the necessity of doing more toward the prevention of the unnecessary loss of sight. Such a campaign should be started in Illinois. The public should be educated to the proper use and care of the eyes.

It is incumbent on those who wish to ameliorate the conditions of a struggling humanity to investigate and eliminate any administrative fault, any kind of neglect, any form of abuse, which may justly be cited as the cause for a single case of unnecessary blindness. Surely any cause which results in such deprivation to a single human being merits the most careful investigation, with a view of such complete elimination that no

person will be deprived of the light, or find himself in a world of unnecessary darkness.

The time for hinting at unpleasant truths is past. No matter how unpleasant the needful truth is to the teacher or to the physician, nor how expensive to the employer, it is time to furnish all the knowledge in our power to make the public see that not only the necessity but the comparative ease of prevention makes it our duty to give all the time and money we can to the work. Life is hard in many ways at the best but to the blind, hardest of all.

DANGEROUS INFECTIONS OF THE EYE

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CHICAGO

Much of the blindness of the world is the result of certain infectious diseases of the eyes that in most cases are easily preventable.

It is an astounding fact, and one not generally known, that one-fourth of all the blind children in schools for the blind in this country, as well as in others, are unnecessarily so.

The United States Census for 1900 shows that in this country there were 64,763 blind persons of whom 3,767 were in the state of Illinois. The census returns on this subject for 1910 are not yet available, but will probably show an increase proportionate to the increase of population.

In studying the subject of blindness, one may arrange the cases in three classes:

1. Those that are the result of certain diseases of the optic nerve, inherited conditions, tumors, etc., that are absolutely incurable or non-preventable by any known means.

2. Those cases caused by injuries, inflammation of the deeper structures of the eye, and many that are ascribed to obscure causes. Many cases of this class might possibly be prevented.

3. Cases caused by infectious inflammation of the eyelids and membranes of the eyeball as well as many cases of injuries of the eyes, all of which could be prevented by proper precautions or could be cured in their beginning by proper treatment. In a study of 1,000 blind, Cohn reaches the lamentable conclusion that there were only 225 unavoidable cases, 449 were possibly avoidable, and 326 were absolutely avoidable.

The views of other eminent students of the subject (such as Herrenheiser, Hirschberg, Trousseau and Landesberg) coincide nearly with the above, so that a conservative estimate places the number of cases of preventable blindness at from 40 to 45 per cent.

I invite your attention to a brief consideration of a few of the infectious diseases of the eye that are responsible for a large proportion of this

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45 per cent. of cases of preventable blindness, about the nature of which the laity as well as the profession should be more fully informed.

Chief among these is the disease technically known as ophthalmia neonatorum, or gonorrheal inflammation of the eyes of the new-born babe.

This serious affection occupies a conspicuous place among the preventable diseases included in the third class before mentioned, and occurs as a result of the infection of the eyes at the time of or soon after birth, and in rare instances even before birth.

The disease usually begins one or two days after delivery of the child, with a redness of the eyes and swelling of the eyelids. Within another day or two a profuse purulent discharge comes from the inflamed lining of the eyelids, and if the trouble is not checked by prompt treatment, the cornea is destroyed and with the subsidence of the inflammation the front of the eyeball is covered with a dense white scar that causes partial or total blindness.

Carefully prepared statistics show that this one disease, next to atrophy of the optic nerve, is the most frequent cause of blindness, and it is variously estimated that from 15 to 25 per cent. of all blind persons are blind from this cause.

Certainly in the special schools which form the general clearing house for the young blind, where usually the cause can be fairly accurately determined, this plays an extremely important rôle, and the percentage is very high. For example: In the school for blind in Sheffield, England, Snell found this the cause of blindness in 136 out of 321 cases or 42 per cent.

Reports from ten schools for the blind in this country, including such institutions as the Perkins Institute of Boston, New York State School, Mission School, Ohio State School, etc., show that of the new admissions for 1907, 27.5 per cent. were blind from this cause. In the Pennsylvania School for the Blind, of all the admissions for the last eight years, 33.36 per cent. were blind from ophthalmia neonatorum. More than 25 per cent. of the pupils at the Institution for the Blind at Jacksonville, this state, are there because of this disease. Reich reports that in Russia one of every 500 of population is blind, and that ophthalmia neonatorum is the cause of 15 per cent. of all blindness. Haussman, in a remarkable monograph, estimated that of those seeking admission to blind asylums of Germany, Austria, Denmark and Holland during a number of years, from 15 to 60 per cent. had been blinded by this disease. Cohn reported in 1876 that in twenty-two German blind asylums 30 per cent. of the cases were the result of ophthalmia neonatorum, while in 1896, twenty years later, the proportion had fallen to 10 per cent., probably the result of preventive measures that will be mentioned later.

More statistics might be cited, but statistics are dry and tedious, and enough have been given to show the serious extent of this really dreadful malady. Dreadful as it is, it is easily preventable, as has been conclusively demonstrated in many lying-in hospitals where suitable preventive measures are practiced.

Prior to the days of antiseptic midwifery, and up to 1880, this disease constituted a veritable scourge among the new-born children in the great

lying-in hospitals of the world, from 2 to 10 per cent. of the children born in these places contracting the disease.

In the great Leipzig maternity, prior to 1880, 10 per cent. of the children born there developed ophthalmia neonatorum, but after the inauguration by Professor Credé of the preventive treatment of dropping into the eyes of the new-born child at birth a drop of silver solution, this percentage at once fell to 0.5 per cent., and this, combined with other antiseptic measures, has reduced the number of cases to almost nothing. Other lying-in hospitals make an equally favorable showing as to the prevalence of this disease since the introduction of antiseptic measures. For example, in a number of British hospitals where the births from 1896 to 1906 were 35,815, there were only seventy-nine cases of this trouble, a percentage of only 0.22.

In good lying-in hospitals where every known precaution is taken, a case of ophthalmia neonatorum is rarely seen. The modern lying-in hospital is therefore a great factor in stamping out this malady which has such a baneful influence on society, and which costs the state so many members and so great an expenditure of time and money. To give an idea of the economic principles involved, it is estimated by the London *Lancet* that in England it costs to educate a blind child up to the age of 18 years $2,500, while for one with normal sight the cost is only $150.

Prevention of this disease consists in careful preparation of the mother before and during confinement, careful cleansing of the child after its birth, and, in suspected cases at least, the use of selected remedies in the eyes immediately.

But the great danger and difficulty lies in the fact that inexperienced, incompetent and dirty midwives often officiate at these functions, and they are more difficult to control.

Laws should be made and enforced requiring better training of midwives and their registration. They should be compelled to report every birth and every case of inflammation of the eyes as soon as it develops, and also be trained to use prophylactic measures against this disease. Laws directed against this evil are on the statute books of several states, including this one, but they are not properly enforced and they need to be amplified.

Under the direction of a committee on ophthalmia neonatorum of the American Medical Association, there is a strong and growing movement to fight this evil by concerted action of the various medical organizations and state boards of health. This committee in its report to the American Medical Association urged the necessity of more careful statistics as to the prevalence of the disease and a wider knowledge of its dangers. It advocates careful registration of births and midwives, education of midwives, mothers and the medical profession on the subject. It also advocates the preparation and distribution by health boards of the remedy chosen as a preventive, with explicit directions for its use; and that state boards of health should be empowered to enforce laws enacted for the prevention of this disease, and even to make such rules, regulations and ordinances as they deem expedient to accomplish this object.

The views of this committee have been endorsed by a number of the medical organizations of the country as well as by the American Public Health Association and the National Congress of Mothers.

A campaign of education on this subject is therefore important. The medical profession, as a rule, is fully alive to the dangers of the disease, but the public and particularly the midwives and the mothers are not. Such a campaign has been started in certain states in this country that have commissions for the blind, notably Massachusetts and New York, and they are doing excellent work. For example, the New York Association for the Blind, which has received substantial support from the Russell Sage Foundation, is accomplishing results by means of its publications, public speaking and photograph exhibits, and has sought and obtained suitable legislation by the state. One of their publications entitled "Directions to Mothers, Midwives and Nurses for the Prevention of New-Born Babies' Sore Eyes" is a small tract, printed in five languages, English, Italian, German, Polish, and Yiddish and distributed by thousands where it is likely to do great good.

Trachoma.—Another dangerous infection of the eye is trachoma, or granulated eyelids. This disease, although not so contagious or so serious as the one just considered, is dangerous partly because it is so insidious. A person often contracts it and for a long time may not know that he has it, unless it appears, as is not usual, with an acute outbreak. More frequently it assumes a more chronic form from the beginning, and the individual is only aware that his eyelids are irritable, scratchy and burning with very little or no discharge. These symptoms prompt him to consult a physician, who, if he understands the subject, recognizes the peculiar roughness of the lining membrane of the eyelids that characterizes the disease, and begins prompt treatment for trachoma.

The roughness of the conjunctiva (or lining membrane of the lids) is due to the presence in that part of small granules or trachoma follicles, which continue to develop and even invade the membrane covering the eyeball. The cornea itself becomes roughened and ulcers may develop; this ulceration of the cornea is the dangerous feature of the disease, for the eye may be lost in consequence. If the ulcer heals, the resulting scar may seriously impair sight.

Through the whole course of the affection, the patient experiences great discomfort, and in the acute outbreaks is utterly incapacitated.

This disease is conveyed by contagion. To contract trachoma one must get into his eye some of the secretion or discharge from a trachomatous eye, and this is usually brought about through the medium of towels, washcloths, handkerchiefs or wash basins that are used in common by a large number of people. Although contagious, it is not virulently so, and by the exercise of proper precautions and average decent cleanliness, one need never contract the disease.

The crusade against the usually filthy roller towel in public or semi-public places is commendable, as it is undoubtedly partly responsible for the dissemination of this as well as of other eye diseases.

Infectious Ulcer of the Cornea.—This usually results from a slight wound of the cornea becoming infected or poisoned by some virulent form of germ or bacterium. The wound of the cornea may be no greater than that caused by a slight scratch or abrasion or even a cinder lodging on it. Through this small opening the infectious organisms that are frequently on the individual's own eyelids find entrance, and the mischief is soon started. Unless prompt and energetic treatment is instituted, rapid and progressive ulceration of the cornea may develop that may cause complete destruction of the eyeball; or if this is happily averted, the resulting scarring of the cornea will seriously impair the sight.

Numerous instances of blindness, especially among the laboring classes who are more apt to neglect slight injuries of the eye, are the result of this form of infectious inflammation. In most cases it might easily be prevented if properly treated in time. The prompt removal of small foreign particles, and the careful antiseptic cleansing of the eye would, in most cases, be sufficient to prevent the trouble.

Sympathetic Ophthalmia from Infective Wounds of the Eye.—This is a form of inflammation that attacks a sound eye some time after the other has been injured by a penetrating wound. The wounded eye is usually infected at the time of injury, and as a result of this becomes seriously inflamed and usually blind. If such an eye does not heal promptly and kindly, and if it is sightless and painful, it had better be removed to prevent so-called sympathetic inflammation from developing in the other eye.

This causes a considerable number of cases of blindness, and is more pathetic as the blindness is usually total. It is more frequently observed among the artisan class, because of the greater risks they encounter from flying particles of steel or broken tools.

It would be well if employees in all factories could be given suitable information as to the dangers of all wounds of the eye, however slight; and better if proper precautions could be enforced to prevent such injuries and the serious results that so frequently follow from a neglect of treatment of them.

Possibly in the new workmen's insurance laws that are sure to come such precautions will be enforced rigorously, as they deserve to be.

It is the duty of the medical profession to disseminate information as to these diseases of the eye, their dangers and the means of prevention. The medical profession has recognized this duty and has not neglected it, but has been continually calling the attention of the public to its importance.

It is the duty of society to help spread this knowledge among the less fortunate and to enact and enforce laws directed to the prevention of these diseases that cause so much unnecessary suffering and such great economic loss.

Illinois should have a commission for the blind, to which should be entrusted the matter of collecting statistics as to the prevalence and causes of blindness in this state, of initiating or supporting movements for prevention of blindness and of cooperating with the proper health authorities in the enactment and enforcement of suitable laws directed to this end.

CONSERVATION OF SCHOOL CHILDREN'S EYES

Frank Allport, M.D.
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About 40 per cent. of our school children have eye diseases or defects that more or less incapacitate them from acquiring a proper education. We must largely look to education, and mental and social training for the diminution of crime and criminals; therefore every child should be educated as well as possible, and if ocular or other diseases or defects are a hindrance to progressive school life, such pathologic conditions should be detected and, if possible, relieved. Even removing crime and criminals from consideration, every person is better, happier and more prosperous if educated; therefore, all obstructions to education should, if possible, be removed.

Millions of dollars are annually spent on the education of children who are unable to progress, and who remain about stationary in school year after year. The lack of advancement is largely due to various physical defects and diseases, in which the eye plays an important part. Millions of dollars may be therefore saved and otherwise expended, if ocular diseases and defects are detected and relieved.

It costs $15,000,000 annually to support the 65,000 blind people of the United States. Many of these people would have escaped blindness if their diseases had been detected during school life, thus preventing extensive misery and the useless expenditure of much public money.

The necessity for the detection of, and relief from, ocular defects and diseases thus being assumed, the best method for the accomplishment of this end should be determined. The mere observation of children by teachers or parents is insufficient and inaccurate. Nothing but a systematic examination of each child is adequate. Such examinations should be annual, should include every child and should take place in the early fall to enable teachers to observe the effect of treatment, and to follow up children and parents if nothing is being done where diseases and defects have been recognized.

Such examinations may be made by doctors, school nurses, or teachers. Doctors are expensive, uncertain as to time and work, and usually produce professional jealousy and discord, which ultimately causes an abandonment of the plan. School nurses are expensive. Teachers can do this work perfectly well if they use the system which I have proposed; in fact, they are especially qualified for the work, as they are intimately acquainted with the children and are familiar with their physical conditions. No medical education is necessary to make the tests, the questions are primitive and simple and will disclose the existence of 95 per cent. of serious eye, ear, nose and throat diseases and defects. Teachers are not expected to *diagnose* diseases and defects, they should simply ascertain the existence of some abnormal condition. The doctor consulted will perform all medical functions. Teachers should not feel that these duties

* Read in a Symposium on "The Prevention of Blindness and the Conservation of Vision," at a meeting of the South Side Branch of the Chicago Medical Society, Feb. 8, 1912.

are a tax on their time and strength. The little apparently extra work will ultimately pay them a hundred fold by producing better pupils in every way. They should therefore assume the work cheerfully instead of grumblingly, as it is for their benefit as well as the child's.

The test consists of nine simple questions, or observations. If a defect or disease is disclosed, the parent is warned by a printed card and urged to consult a doctor of his own choosing. Simple records are kept. A child can easily be examined in five minutes, with systematized proceedings. School rooms usually contain about forty pupils. An entire room can therefore be examined in four hours. I recommend that a regular and definite day in each early fall be dedicated to this work, during which time each teacher shall examine her own pupils. By thus subdividing the work every school child in a city of any size can be examined in one day.

If this plan is regarded as unfeasible on account of interference with the regular school work, from eight to ten children can be detained after school each day, until all are examined. By this plan all children could be examined in a week. Teachers and school nurses can greatly assist the beneficial achievements of the plan by displaying continued interest in defective and diseased children, remembering that most public school children possess parents both ignorant and careless, who greatly need the guidance of intelligent and conscientious people. The expense of this plan is practically nothing, if performed by teachers; it consists merely in the purchase of the testing charts and the printing of the "warning cards" and the record blanks. Where can so much good be accomplished for so little money?

It is the opinion of most educators and school hygienists that boards of health should only have supervision of those pathologic conditions of school children which menace the public health and that the physical defects of pupils should fall under the control of the board of education.

ILLUMINATION AND VISION*

JAMES R. CRAVATH
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Illumination makes vision possible. It is therefore important to study the conditions favorable and unfavorable to easy and comfortable vision to the end that we may avoid illuminating arrangements detrimental to eyesight.

Good daylight illumination like good fresh air has been provided so freely by Nature that for many years little thought was given either to the kind of air we breathe or the kind of illumination we have to work under. Modern conditions of living, however, have forced us to consider the fresh air and ventilation problem. Likewise modern conditions force us to attend to the illumination problem.

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Among the principal things causing the existence of an illumination problem in connection with the conservation of vision may be mentioned the increasing amount of close work required of the eyes in factories and offices, the tendency to arrange offices and factories so that there is an insufficient supply of daylight, and last but not least, the increasing amount of work which is done under artificial light.

Of the bad natural and artificial arrangements, those are most dangerous which are not bad enough to be so evidently uncomfortable and injurious that they are changed or avoided.

A large number of persons work every day under conditions of lighting which are not bad enough to make a change imperative, but which nevertheless cause considerable unconscious eye strain.

Without attempting to go into the reason why certain lighting arrangements are bad, I will simply mention some of the principal things to be avoided in natural and artificial lighting.

Insufficient light would seem to be a defect apparent to any one, but nevertheless exists in some crowded offices and factories. At the present time there is considerable uncertainty as to the minimum illumination required for any given kind of work as expressed in foot candles on the surface illuminated. Recent experiments by the writer indicate differences as great as 1 to 5 between different individuals for doing the same work. In general the amount of light required increases with age.

A flickering light, whether natural or artificial, should be avoided, as its strain on the eyes is a matter of common observation. Daylight is usually steady unless one is working near a window across which steam or smoke is blown at intervals. The flickering open gas jet is probably the worst offender in this respect among artificial illuminants. A swinging electric lamp on a drop cord is also bad; so is a flickering arc.

Many people work under electric light with polished tin reflectors or reflectors lined with smooth white opal glass, which cause irregular streaks and lines on the paper or other surface illuminated. This is bad because the eye is constantly attempting to adjust itself to the differences in illumination.

The most prevalent bad conditions in connection with artificial light are glare from lamps shining in the eyes and the glare of reflection from the lamps as received from the polished or calendered papers which are now commonly in use.

We instinctively shield our eyes from the sun. We are obliged to do this in self-defense. When we come to artificial illuminants of various kinds, however, these small sources of light are not sufficient to force us to shield our eyes from them. Much eye strain and annoyance are caused by bright unshaded artificial light shining directly in the eyes. The amount of eye strain caused by artificial light shining in the eyes is dependent on the candle power of the lamps, the distance from the eye, the condition of the individual and the contrast of the lamps with the surroundings; that is, a certain lamp amid dark surroundings is much more annoying than the same lamp amid very light surroundings. Even daylight can be annoying and probably injurious if a person is facing a

small window in a rather dark room so that the window is in strong contrast to its surroundings. The man who works with a bare electric lamp or gas jet a few inches in front of his nose without a shade either over his eyes or over the lamp may have eyes strong enough to stand this treatment indefinitely without harm, but he is taking large chances, where it is really unnecessary to take any. Incidentally, he is causing himself an altogether unnecessary amount of annoyance, as it requires some effort to see clearly under such circumstances, and in fact under some conditions there is an actual reduction of one's ability to see clearly with a lamp in the field of vision. That, however, is another matter too lengthy to discuss here.

Church and auditorium architects and building committees are not properly looking after the comfort and conservation of vision of the public when they arrange lamps so that a large amount of undiffused, unshaded light shines directly in the eyes of those in the audience.

Another man who needs educating is the architect who insists for so-called artistic reasons in lighting living-rooms and bedrooms entirely by means of lamps on low brackets. If such bracket lamps are properly shaded, there is not enough general illumination in the room, while if they are unshaded the glare from the lamp renders the illumination uncomfortable from every standpoint.

Notwithstanding all that I and others have said about the bad effects of too much glare from exposed artificial light sources shining directly in the eyes, my personal opinion is that at the present time as far as the public generally is concerned, there is far greater menace to vision in the glare from papers or polished surfaces over which we work by artificial light. These papers or polished surfaces reflect to the eye a blurred image of the source of light whenever the angle from the light to the paper and the paper to the eye is the same. Everyone who reads or does office work, or works over polished metal in a factory by artificial light is subject to this annoyance. The reason this is so much more troublesome with artificial light than with daylight is that the sources of artificial light are small, while the source of daylight to a person indoors is a large area of sky. The smaller the source from which the light comes, the more pronounced will be the annoying glare reflected from the paper. It is this which constitutes one of the fundamental differences between artificial light and daylight. It is doubtless mainly responsible for the prevalent idea that artificial light is necessarily not as good to work under as daylight. It is also probably responsible for an erroneous idea that certain kinds of artificial light are of themselves more trying on the eyes than certain other kinds. With a bare incandescent lamp, for example, the source of light is very small as compared with the large flame of a kerosene lamp, hence a very prevalent idea that there is nothing like an old kerosene lamp for reading purposes. The light from the electric lamp can be so diffused as to be as good or better than the kerosene lamp. It is entirely a question of how the lamp is used rather than the kind.

One often experiences glare from work so pronounced that reading is impossible. There is no particular danger in this, because when the

glare is prohibitive of reading one naturally shifts either his position or that of the paper. Where the real eye strain comes in to the majority of workers under artificial light is in their attempt to read or do other work when receiving a certain amount of incipient glare from the paper, but not enough to make them realize that they should improve the conditions. There is an immense difference in the eye strain involved in reading on smooth paper under a desk lamp in different positions. Yet reading may be quite possible in all of these positions. Furthermore, one frequently sees desk lamps so arranged close to the work that the worker is constantly receiving glare from some portion of the desk or paper, even though the particular part on which he is reading may be inoffensive. This is a cause of eye strain. The remedy for these conditions lies in a more careful placing of any local individual desk lamps which must be used, but even more important than this is providing a good system of general illumination whereby the light may be received on the work from a number of different directions, and from sources of light as large in area as possible.

PREVENTION OF BLINDNESS *

Willis O. Nance, M.D.
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The subject of the prevention of blindness is one that should be of the greatest interest to the public generally. It has been clearly shown that there is an economic as well as a social phase to be considered. The question of the most intense moment is, What practical means can best be employed to prevent loss of sight? Unquestionably, more can be accomplished by education than any other means. Next to this, intelligent legislation can avail much. First, teach the public that the cause of at least 30 per cent. of all blindness is due to inflammation of the eyes of the new-born child and urge them to be on the lookout for the disease in their own and their neighbors' families. Teach them that this disease seldom occurs when the family doctor or other attendant does his full duty. Teach them that, as a rule, redness of the eyes when accompanied by a sticky discharge is contagious and to avoid coming in close contact with another person when suffering in that way. Teach them of the dangers of injuries of the eye, not only to the eye involved, but to the other eye by "sympathetic" disease transmission. Teach them the dangers of serious infection incident to the removal of cinders from the eye by means of toothpicks, matches and the like. Caution them against the use of proprietary "eye-drops" and simple "home remedies" in serious inflammations of the eye. Teach the children to amuse themselves in other ways than by the use of air-rifles, pocket knives, firecrackers and fireworks. Urge on factory owners and railroad managers the value of safety appliances.

* Read in a Symposium on "The Prevention of Blindness and the Conservation of Vision," at a meeting of the South Side Branch of the Chicago Medical Society, Feb. 8, 1912.

Intelligent legislation can assist materially in preventing blindness. The passage of the ordinance abolishing the roller towel in public lavatories in Chicago last summer, which the speaker had the honor of introducing into the city council, and the newspaper publicity incident to its adoption by that body, I believe, has aided materially in preventing the spread of many serious contagious eye diseases by forcibly bringing before the public the dangers of the "common" towel. The ordinance introduced in the city council last Monday night providing for the prompt report to the health department of all cases of sore eyes in new-born babies will, if adopted, result in the prevention of many cases of blindness.

Public meetings held under the auspices of the public press, as this one to-night, will do much toward aiding the propaganda. Let members of the medical profession, teachers, sociologists, social workers, women's clubs and civic organizations generally take on themselves the duty of spreading such knowledge as will better inform the public on the subject and much blindness will thereby be prevented.

PREVENTION OF INJURIES TO THE EYES IN STEEL MILLS*

ROBERT J. YOUNG
Secretary, Committee on Safety, Illinois Steel Company.

For a number of years the Illinois Steel Company has been carrying on an active campaign for accident prevention. It has not only devised many different kinds of safeguards, but has evolved a number of ways of keeping the workmen interested in this work and in looking out for their own and others' safety.

In steel plants the dangers of injuries to the eyes arise from several different sources, viz., chipping castings and other metals; handling molten metal; grinding metal on emery wheels; pouring babbitt; the use of the electric arc at blast furnaces; the use of the electric arc welder.

Chipping Castings and Other Metals.—The men who are employed as chippers in the casting yards are urged to wear goggles and a great deal of effort has been made to get goggles that would be satisfactory to the men and which would not inconvenience them. The glass goggle (Figs. 1, a and 1, b) appears to be giving the best satisfaction.

When men are doing heavy chipping, such as "ragging" rolls, they are provided with wire face masks (Fig. 2).

The chipping yard foreman makes sure every morning that each man is provided with a perfect pair of goggles, and he urges the men to wear them. In addition to this, signs in the English and foreign languages are posted in the yards, warning the men of the danger of chipping without the eye protectors (Fig. 3).

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* Read in a Symposium on "The Prevention of Blindness and the Conservation of Vision," at a meeting of the South Side Branch of the Chicago Medical Society, Feb. 8, 1912.

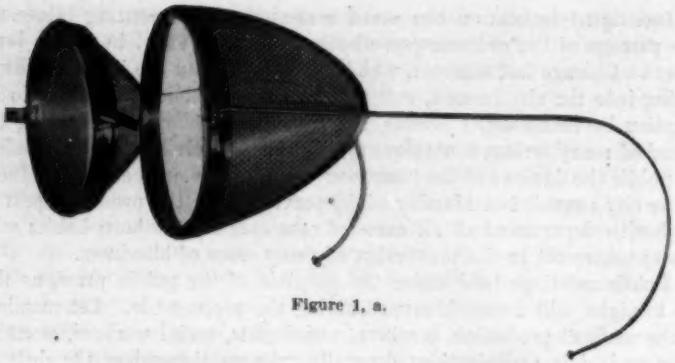

Figure 1, a.

Figure 1, b.

Figure 2.

DANGER
YOU ARE WARNED AGAINST WORKING WITHOUT EYE PROTECTORS OR WITH BATTERED TOOLS. GET PROPER TOOLS AND EYE SHIELDS FROM FOREMAN
NEBEZPECNO
TEBE JE ZAKAZANO PRACOVAT BEZ SKEL NA OCI ALEBO SE SPATNYMA NASTROJI. DOSTANTE DOBRE NASTROJE A SKEL NA OCI OD FORMANA
VESZÉLY
OVAKODJ SZEMVÉDO NELKÜL VAGY ELRONTOTT SZERSZÁMMAL DOLGOZNI KERJEN FOREMANJATÓL RENDES SZERSZÁMOT ÉS SZEMVÉDÖT
OPAZNO
KADA RADIŠ PAZI DA JE TVOJE ORUDJE SASVIM CIJELO I NO NAOCALE. SVE ĆEŠ DOBITI OD FORMANA.
NIEBEZPECZENSTWO
NIE PRACOWAI BEZ SZKIEŁ, JAKOTEŻ ROZBITEMI NARZEDZIAMI DOBRE NARZEDZIA I ZSKŁA NA OCZY MOŻNA DOSTAC OD FORMAMANA
W. A. FIELD

Figure 3.

Figure 4.

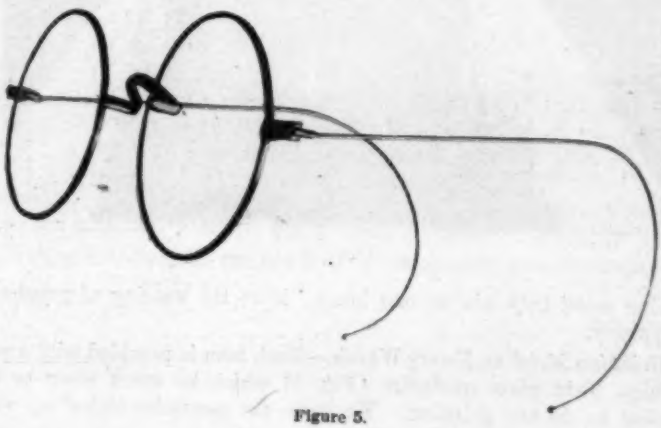

Figure 5.

Pouring Molten Metal.—The goggles worn by the men while pouring molten metal are imported from Germany (Fig. 4). There are also signs, in the English and foreign languages, at the places where molten metal is poured, warning the men that if they do not wear these goggles while

Figure 6.

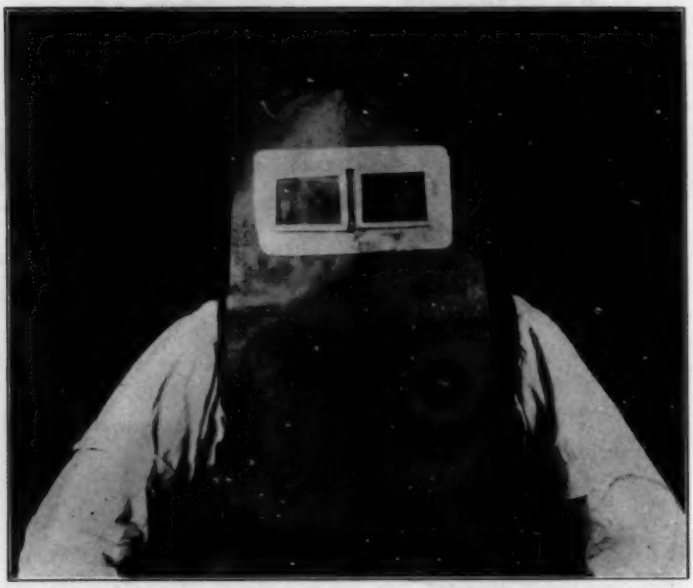

Figure 7.

pouring metal they will be sent home. Here the wearing of goggles is compulsory.

Grinding Metal on Emery Wheels.—Each man is provided with a pair of large plain glass spectacles (Fig. 5) which he wears when he has occasion to do any grinding. He keeps the spectacles locked up when

not using them. The men are not allowed to exchange glasses because of the danger of transferring diseases of the eye.

Pouring Babbitt.—In pouring babbitt each man is required to wear goggles. This pair of goggles (Fig. 6) shows what would have been the fate of one workman had he not been so protected. He was pouring babbitt when it exploded and had he not been wearing goggles he would have lost the sight of both eyes.

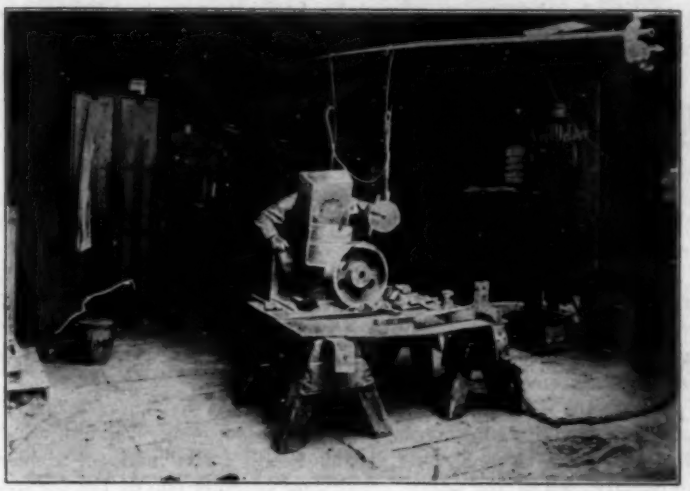

Figure 8.

The Electric Arc at Blast Furnaces.—The electric arc is used in cutting away iron which has "frozen" in the tuyeres and in the tapping holes of a blast furnace. In addition to the rules explaining to the men that looking at this intense light, even for a short time, will cause great pain in the eyes and possible injury, face shields (Fig. 7) in which are placed three layers of colored glass (one blue between two red) are provided for their use and protection.

Electric Arc Welding.—A different kind of a shield is provided for the arc welder (Fig. 8). The shield, which is fitted with colored glass, is suspended in front of the workman so that he watches the work through the colored glass and is also protected from the heat.

All goggles and shields are provided by the company free of charge.

THE COST OF PREVENTABLE BLINDNESS TO THE NATION

Hyman Cohen, M.D.
Assistant Chief, Bureau of Medical Inspection, Department of Health, Chicago
CHICAGO

Economic considerations are pivotal in the explanation of any and every phase of the health movement. Their leverage partakes of the nature of cosmic law and is socially imperative. If we seek for a basic explanation for the rise, spread and development of the health movement we must turn to the economic laws governing society. With respect to the health movement three steps are discernible:

1. Primitive man only had his muscles to aid him in the struggle for existence. Inability to produce enough to sustain the race resulted in chronic conditions of famine. Feticide, infanticide, the killing of the old and weaker members of society, were recognized and justified social practices. Food was scarce, some had to die before their time and it mattered little how they died. Under such circumstances health considerations were impossible.

2. In the next stage, when man's brain came to the assistance of his brawn, when implements and tools were invented and applied, a fuller cooperation with Nature obtained. Production balanced consumption; death, for lack of food, is removed as an inexorable law; personal hygiene, in some form, comes into being.

3. With the introduction of modern machinery, division of labor, etc., production outstrips consumption, man receives a money value, the individual becomes a national asset and his health a vital national problem. The conservation of the public health now becomes one of the foremost governmental functions. Thus understood, the health movement is not a mere expression of sentimental altruism, but a sociologic phenomenon of first importance. This offers a solid foundation for our efforts in furthering the movement.

The work in behalf of the preservation of sight and the prevention of blindness is only one of the manifestations of the many phases and activities of the health movement. In our gradual examination of our aggregate human body we have come to see that there should be none who cannot see. We are beginning to appreciate the greatest of all sayings in the great book: "And God said 'Let there be light.'" Also we are beginning to see the dollar — that is lost — through our blindness.

The most pertinent query in connection with any preventable disease is: "If preventable why not prevented?" The best and cheapest way to prevent is to remove the cause or causes. Ophthalmia neonatorum, gonorrheal infection, is the most frequent, the most deplorable, because easiest preventable, the most unnecessary and potent cause of blindness. Twenty-five years ago it was estimated that it contributed over 30 per cent. to the total number of blind. Twenty-five per cent. of those under 20 years of

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age now in our public institutions for the blind are victims of ophthalmia neonatorum. It still contributes 10 per cent. to our blind population. Of the 65,000 blind in the United States no less than 7,000 have been blinded by gonorrhea.

Small-pox at one time was a wide-spread cause of blindness. In Russia, Solowin found 28 per cent. of blindness of 552 cases investigated in eighteen institutions due to small-pox. Among us to-day it is happily rare; unless ignorant and antisocial court rulings as to vaccination and misguided soft-brained ideas of "personal liberty" succeed in bringing the dread scourge — small-pox — in our midst, to put our eyes out.

Avoidable accidents are responsible for 14 per cent. of blindness. Old age with the unfavorable conditions frequently accompanying it, such as poverty, sickness and previously practiced general functional abuse of the body, contributes about 15 per cent. of blindness. It is stated on good authority that 4 per cent. of blindness is due to progressive nearsightedness brought on by ill-fitted glasses. Other causes are the drinking or exposure to wood alcohol, exposure to lead and arsenic and the excessive use of tobacco.

The cost of blindness to the state, and in this instance "cost" is synonymous with "loss," is positive and negative. On the positive side the cost is distributed over the following items: (1) cost of treatment at the onset of the disease; (2) cost of educating the blind; (3) cost of maintenance. The negative items of cost, or rather loss, are: (1) unemployment; (2) reduced earning capacity.

The cost of treatment is difficult to calculate, as can be readily seen. It is safe to figure an average of $25 per case, which would amount to $1,625,000 for the 65,000 cases in existence. This is the smallest item. It costs the state about $22 per year to educate a normal child. The per capita cost of educating a blind child is $110 per year. Add to it the fact that the blind child stays in school about fifteen years to the average ten years of the normal child, and the cost of educating the blind is nearly tenfold that of the normal child.

The cost of maintenance, to the state, of the dependent blind is about $10,000 per capita through life. Multiplied by the number of blind we get the huge sum of $650,000,000. This divided by the average duration of life in the blind, say thirty-five years, and we get approximately $18,000,000 as the yearly expenditure of the country in maintaining the blind. It takes $1,800,000, or one-tenth of the total, to maintain the sightless wrecks of ophthalmia neonatorum alone. Then there is the negative cost of unemployment and reduced earning capacity. The average wage of those of the blind men who are employed is $7 per week; that of the women about $3 per week. There are no definite data as to the number of blind employed, probably not more than one-third of the total. If we bear in mind the surplus value created by the normal individual and compare with it the loss through unemployment and reduced earning capacity, it would probably amount to as much as the actual loss. Blindness, then, places a huge and unnecessary tax on the country that the blind who can see must pay for the blind who cannot see, for the

cost must be borne by the seeing, the blind themselves cannot pay for it except in eternal darkness and wasted, pitiful existences. The loss to the blind is one that cannot be estimated without a mental groan.

Now what will it cost to prevent unnecessary blindness, and first of all what will it cost to prevent the most preventable and most unnecessary form of blindness, that due to ophthalmia neonatorum?

A 1 per cent. solution of silver nitrate instilled in both eyes is a sure preventive. Silver nitrate sells at $6 a pound. Four pounds of silver nitrate at a cost of $24 would suffice to protect the eyes of the 57,000 children born annually in Chicago. Add to the cost of the drug the cost of the containers and the expense of distribution and it will amount to something like $500. For $500 we can protect the eyes of over 50,000 children; we can save human eyes — baby eyes — at two for a cent. At the same rate it would require $25,000 a year to protect the eyes of every one of the 2,000,000 children born in this country. Compare this insignificant sum with the cost of blindness. Why don't we do it? Because, as a community, we are still ignorant and careless about the health of the individual; our humanity is only moved at the sight of misery which we have allowed to become established. It is not a wise planning humanity that prevents, it is a commiserative humanity. Because, also, we are poor business men and do not understand the economics of health and disease in their large aspects. Because of such a state of public ignorance and indifference there is no such thing is a complete registration of births in this country. For the same reason ignorant persons are allowed to officiate at the birth of the children of the nation without attempting to protect their eyes. Again, in very few instances is ophthalmia neonatorum reported to the health authorities at the stage when proper and active treatment can save the child's eyes.

It is not a mere matter of supplying the silver solution to those stationed at the portals of life. This should be done by all boards of health and is being done by many. The real problem and the real task lies in educating the midwives and physicians as to the importance, urgency, harmlessness and ease of the procedure. Above all the public at large should be educated to demand "the drops." Without an intelligent coercive public opinion not much will be accomplished.

The other causes of blindness are gradually being eliminated. General hygienic conditions are improving. Blindness through accident is being reduced through safety devices. Here economic principles — hospital bills, damage suits, invalidism, are potent enough to bring about practical humanitarianism.

The baby, the one that needs protection most, is least protected. Ignorance, guilt, criminal carelessness rob it of its sight. Intelligence, public spirit, humanity and practical economic considerations must come to the aid of the infant.

The question is: Shall we pay an enormous sum and allow destruction and blindness to exist in our midst, or shall we pay an insignificant sum for sight preservation? Shall we allow ignorance and criminal carelessness to rob us both of our sight and money, or shall we arouse public

spirit to see to it that the great gift of light is assured every child born? Shall we go on blundering blindly in our duty, or banish blindness — the darkest curse — from the land? These questions the community must answer not only for reasons of economy but also from moral and humanitarian considerations.

MIDWIVES AND BLINDNESS *

CAROLINE HEDGER, M.D.
CHICAGO

What we know, what we do not know, how can we find out, and what can be done about two very bad situations?

1. There is no adequate birth registration, and if the babies' eyes are saved, it must be the doctor or the midwife who saves them. And yet blindness is a social problem, and you support the blind; therefore it is vitally your business to know whether eyes are lost, why they are lost, if it can be prevented, and that your doctors and midwives are adequate to prevent such loss.

TABLE 1.—ILLINOIS
(Compiled by Dr. Wilder.)

Year	Number Blind.	Number per 100,000 population
1870	1,042	41
1880	2,615	85
1890	2,835	74.1
1900	3,767	78.1

2. Blindness in Illinois (Table 1) was, up to 1900, fluctuating but not decreasing. Table 2 shows that while Illinois occupies the enviable position of lowest number of colored blind per 100,000 of population, her position in white blind is not so good, being just at the mean for the whole United States, 78.1.

3. One-third of the blind in Jacksonville are there because of ophthalmia, by the report of the superintendent of the institution. Ophthalmia is a preventable disease, and must be prevented in one of two ways: (*a*) by keeping gonorrhea out of the family; (*b*) by treating the eyes of babies as soon as born with some substance that will not harm the eye but will destroy the germ of gonorrhea.

4. The attorney for the State Board of Health informs me that midwives are forbidden to use any drug. Therefore the midwife must break the law or leave the babies' eyes to chance. As a matter of fact, in a recent investigation by Mrs. Horrigan and her nurses and made possible through the kindness of Health Commissioner Young, out of 363 midwives, thirty-seven use silver nitrate, three use argyrol, another silver salt, and 175 use boracic acid.

5. The same 363 midwives admit in their practice but 139 cases of sore eyes. This probably must be laid to lack of observation or to extreme

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modesty in stating the case. Where do those in Jacksonville come from? From the infection in the family in the first place, and from the inadequate or delayed treatment by midwives or doctors in the second.

6. The law in Illinois demands that the midwife shall report all cases of sore eyes to the health department or to a doctor. Does she? We don't know. The 363 admitted having reported thirteen cases to the health department.

7. The health department has just made ophthalmia, the sore eyes of the new-born, a reportable disease; this should help and I believe will help.

Table 2.—Blind per 100,000 Population by States

	White.	Colored.		White.	Colored.
Wyoming	21.5	114	*Massachusetts*	79.5	87
Washington	40	96	*Michigan*	80	156
Montana	40	158	Mississippi	80	74
Minnesota	50.6	146	California	80.5	92
North Dakota	52.6	524	*Connecticut*	82	62
New Jersey	53	95	*South Carolina*	82.2	78
Colorado	54.7	92	*Maryland*	82.7	102
Arizona	56.1	99	Virginia	85.7	86
Nebraska	60	143	*Iowa*	90.2	121
Oregon	60.2	242	Georgia	91.8	84
Oklahoma	62.8	107	North Carolina	94.4	84
Indian Terr.	66	95	Kansas	95.2	103
Rhode Island	66	105	West Virginia	96.5	80
Idaho	68.6	590	Alabama	97	90
Texas	68.7	66	New Hampshire	101.3	0
South Dakota	69.7	388	*Maine*	104.4	0
Pennsylvania	70	66	Missouri	107	..
Wisconsin	72	170	*Ohio*	107.4	148
Dist. Columbia	72.5	90	*Indiana*	118	91
Utah	74	165	*Tennessee*	118	104
Florida	74.4	77	Arkansas	121	86
New York	75.5	78	Kentucky	129	133
Delaware	76	61	Nevada	132	533
Louisiana	77.5	84	*Vermont*	132.7	229
Illinois	78.1	57	New Mexico	230.4	291

States in italics have laws requiring midwives to report ophthalmia.

What We Do Not Know.—We do not know how many babies are born in Chicago or where, because we are tied to a perfectly good law that has never been made workable in Cook County because the county has never voted the funds called for in the law to pay the doctor for a birth certificate. [*Appropriation now made.*]

Should the doctor be paid 25 cents for a birth certificate? He should. It often necessitates an extra call and is very little advantage to the doctor. The birth certificate has a value to the parent and there the responsibility should rest and that without pay.

Mr. Schweitzer, our present county clerk, sees the need of birth registration and is making efforts to increase it. According to a bulletin of the State Board of Health Peoria and Chicago have the right to have birth registration transferred to the health department. If, however, the payment for the certificates devolves also on our financially burdened department of health, little would be gained.

If this change could be made and the county pay the fees it would save delay and transfer of names.

We do not know how many midwives we have or where they practice or what their qualifications are. Midwives are licensed by the State Board of Health, but the law provides for no inspection, so once licensed they are lost. They may marry, move, die or let some one else carry on their work and no one is the wiser. Their examination is a written one. I have a sworn statement as to the methods in one such examination a few years ago. A Slavic-speaking physician was writing for a license

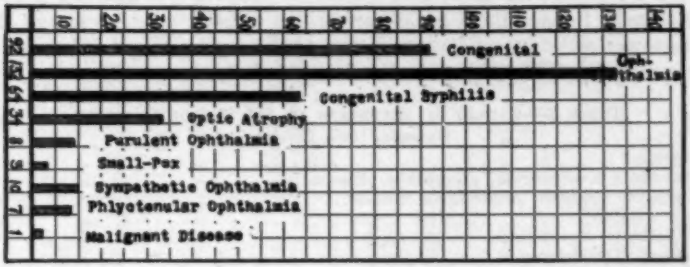

Chart showing causes of blindness in 363 school children examined in London (Harmon, 1907). Solid black column indicates blindness due to preventable venereal disease.

in the same room with the midwives. A Polish woman, acting as interpreter, walked up and down discussing with the midwives how the questions should be answered. The physician protested to the examiner but the only reply thought necessary was: "If it wasn't for the midwives what would all you doctors do?"

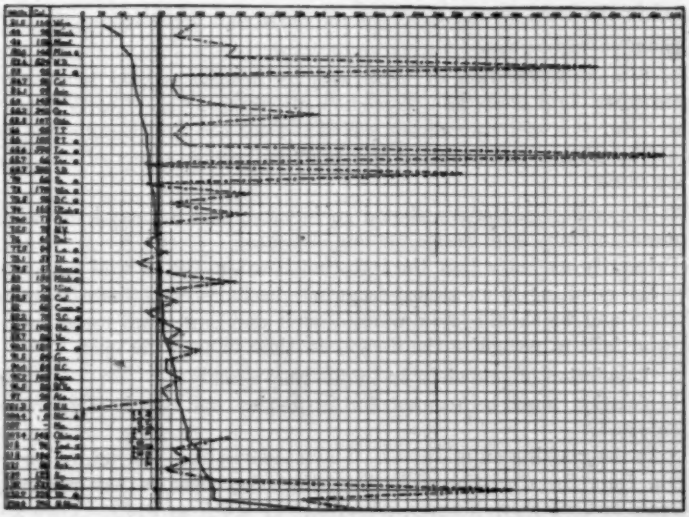

Chart showing blind per 100,000 population by states. Starred states have laws requiring midwives to report ophthalmia. The two columns of figures to the left show percentage of blind distributed btween the white and colored races.

We know a little, but very little, of the training they get unless they are taught abroad. Seven schools were found that charge all the traffic bears, $100 to $175 for six months' training, on the average.

Some had no books, some gave no practical instruction. One school for midwives is run by a translator for the State Board of Health. The need for a judicial mind in such a situation is painfully apparent but as a financial possibility it "can't be beat."

How much do you fancy such schools teach about eyes and how to care for them? I judge these schools are still a valuable asset, as one of the nurses was called up and roundly abused for trying to get information from a pupil. They wish to be let alone; so do leeches.

TABLE 3.—CAUSES OF BLINDNESS IN 363 SCHOOL CHILDREN
Harmon, 1907, London.

Congenital	92
Ophthalmia Neonatorum, preventable disease	132
Congenital Syphilis, preventable disease	64
Optic Atrophy	34
Sympathetic Ophthalmia	10
Purulent Ophthalmia	8
Phlyctenular Ophthalmia	7
Smallpox	3
Malignant Disease	1
Others	12
Total	363

Outside of Jacksonville we do not know what part of the blindness is due to ophthalmia, as the U. S. census says only "sore eyes." Table 3 gives the results of one careful study in London. Lines 2 and 3, as you will see (196 children), are from preventable disease and must be prevented in the home as well as by the physician and midwife.

What should be done?

1. Simple notification of birth and its location should be received within forty-eight hours and inspection instituted by the Health Department. But this will cost money. Well! Does not Jacksonville and the Industrial Home, not counting the needless human agony of one-third of the blind?

2. Reporting ophthalmia should go forward, that we may know where we stand and who is to blame for our blindness.

Primarily we know that the infection is often due to wild oats sown years ago resulting in an almost forgotten discharge, but there is contact infection and we should know where that is and how much there is of it and who fails to recognize the danger in time to save the eyes.

3. Regulation of midwives and midwives' schools.

Legislation must be secured for inspection and yearly registration of midwives.

Stop the grafting on midwives. The midwives have a belief, to borrow a term from the Christian Scientists, that they have to pay money at intervals to keep their licenses, sometimes as much as $100. They also believe that the man who takes the money has the same name as an employee of the State Board of Health.

TABLE 4.—STATES REQUIRING REPORTS OF OPHTHALMIA FROM NURSES AND MIDWIVES

Date of Legislation.		Arising period after birth.	Report after disease begins.	Report to whom.	Report how made.	Report what conditions.	Penalties	Responsibility of Report
Conn.	1902	2 weeks	Within 6 hrs.	Lo. Health Off.	In writing....	Red, inflamed, swollen	Up to $200 fine	Midwife, nurse or attendant.
D. C.	1911	New-born ...	.....	Lo. Health Off.	In writing....	Inflam. and discharge	.....	Midwife, any person other than doctor.
Idaho	1908	2 weeks	6 hours	Lo. Health Off. or to Phys.	.....	Red, swollen or pus	$100 fine and imp. or both	Midwife, nurse or other person.
Ill.	1909	2 weeks	6 hours	Lo. Health Off. or Phys..	In writing....	Inflam., or reddening	$100, 6 mo. or both	Midwife or nurse.
Ind.	1904	2 weeks	6 hours	Lo. H. Off. if no Dr. on case	In writing....	Inflam. or reddened	$10-$50	Parents or caretaker if no doctor in charge.
Iowa	1896	2 weeks	6 hours	Lo. Health Off. or to Dr.	.....	Iuflam., red or secreting	$25-$100; 30 days	Midwife, parent, guardian or nurse.
La.	1909	New-born	12 hours	Lo. Health Off.	.....	Inf., red or swollen	.....	Midwife or persons other than doctor.
Maine	1909	4 weeks	At once	To Doctor....	.....	Inf. or red...	$100; 6 mos.	Midwife, nurse or P. in chg.
Md.	1904	2 weeks	Immediately .	Lo. Health Off. or Dr..	.....	Inf. or red or pus	Max. $100; 6 mos.	Anyone in charge. Doctor exempt.
Mass.	1907	2 weeks	6 hours	Lo. Health Off.	In writing....	Inf., swollen, red or pus..	.....	Midwife, nurse, person in charge.
Mich.	1897	2 weeks	6 hours	Lo. Health Off. or Phys.	In writing....	Inf., swollen, red or pus.	.....	Midwife, nurse, person in charge.
Minn.	1910	2 months	12 hours	Lo. Health Off.	In writing....	Inflamed	.....	Person in charge.
N. J.	1890	2 weeks	6 hours	Lo. Health Off.	In writing....	Inflam., swollen, red disch.	.....	Doctors need not, person in charge.
Ohio	1910	10 days	6 hours	Lo. Health Off. or Phys.	.....	Inflam., swollen	$5-$100; 30 days to 6 mo.	Midwife, nurse or relative.
Penn.	1895	2 weeks	6 hours	Lo. Health Off. or Phys	In writing....	Inflam., swollen, red	$20-$100; 10 to 30 days	Midwife, nurse or relative.
R. I.	1909	2 weeks	Immediately .	Lo. Health Off. or Phys	In writing....	Inflam. or red	Max. $100; 6 mos.	Midwife, nurse, or acting nurse.
S. C.	1902	Anytime after birth	At once	Bd. Health...	.....	Inflam. or red	Max. $25; 1 mo. or 60 dys.	Person in charge in towns less than 1,000.
Tenn.	1911	2 weeks	Immediately .	Bd. Health or Phys.	.....	Inflam. or red	.....	Midwife, nurse, person in charge shall apply no remedy.
Texas	1909	New-born	12 hours	B. of H. or Ph.	.....	Inflam. or red	.....	Doctors exempt.
Utah	1911	New-born	6 hours	Bd. of Health	.....	Inflam. or discharging	Misdemeanor	Doctors must report and treat accd. to state board of health.
Vt.	1906§	2 weeks	6 hours	Bd. of Health	In writing....	Swollen, red, disch.	.....	Nurse, relative or person in charge.
Wis.	1909	2 weeks	6 hours	Bd. of Health	In writing....	Swollen, red, disch. or Inf.	.....	Nurse, parent or attendant.

The State Board protests in their bulletin that this man is impersonated. The Board should send as many midwives as they can find explicit directions in foreign languages not to give their money to strangers, else their belief might become a fixed delusion that our government is not run on the square and that might make the midwife lax about observing the law.

The schools should have registered standards set by law and supervision instituted.

4. A campaign of education should be undertaken on the causes of ophthalmia; not alone that silver nitrate will prevent development of germs in the infected eyes of the new-born but also that babies have a right to clean fathers and mothers free from voluntarily acquired venereal diseases as well as accidental contact infection.

5. Legislation must be secured not only permitting but demanding that a prophylactic be used by midwives and that every midwife be thoroughly and personally instructed as to proper methods.

APPENDIX

Recommendations of the Committee on Ophthalmia of the American Medical Association, Concurred in by the Public Health Association:

1. To secure laws requiring registration of births.

Midwives to be examined and registered in each county.

Midwives must report ophthalmia.

2. Health Boards shall educate as to dangers of ophthalmia, methods of infection, and prevention.

3. Distribution by Health Boards of supply of chosen prophylactic and explicit direction for use.

4. Records should be kept in institutions.

(*a*) Number of cases of ophthalmia.

(*b*) Treatment.

(*c*) Results that occur as well as blindness.

5. Reports periodically from doctors of the same.

DISCUSSION

Dr. C. E. Paddock: The symposium of this evening is timely and of value to the community. It is an advance step in the health progress of mankind that the laity begins to realize not only what the medical profession is doing for the prevention of blindness, but that they themselves by the knowledge of a few simple rules may greatly aid the profession in its efforts in this and other directions.

It is a pleasure for me to add from an obstetrical point of view a few words on the subject of to-night's discussion.

Frequently, a few hours to a few days after the birth of a child, there appears a condition known to the profession as ophthalmia neonatorum and known to the people as sore eyes. It is a serious infection usually, and in the past has been the cause of most of the blindness in babies. This disease is a preventable one if the eyes be properly cared for immediately after birth. Many states make it obligatory that the physician or midwife in attendance use a solution in the eyes of the new-born immediately after birth. The customary treatment is a 1 to 2 per cent. nitrate of silver solution.

Statistics are valuable only as their source is reliable. Statistics on this subject from the leading ophthalmologists and obstetricians throughout the world

prove conclusively that the treatment known as the Credé method has reduced blindness from gonorrheal infection to a minimum.

Ignorance of the scientific treatment of the eyes of a new-born is responsible for much blindness. The ignorance of the midwife is one of the factors we confront to-day. In most cases she is uncleanly, dominant and ignorant of scientific treatment and has but little right to be entrusted with the lives of a mother and child.

I am opposed to giving a man or woman a license to practice medicine who has not the preliminary education required of a student entering a medical college and who has not finished a complete medical course and earned a degree.

To specially educate women to practice medicine without the full medical course I oppose.

The only seemingly reasonable recognition of the midwife's right to practice is an economic one, but as later in the month in this course of lectures I am to speak on the relation of the midwife to the community, I shall not tire you by going into detail this evening.

It is the moral right of an expectant mother, poor or rich, to secure such care as will enable her to produce a healthy child. This cannot be done without skilled attendance during pregnancy and wise direction during convalescence.

Every new-born babe should be an asset to the state; one rendered blind by an ignorant attendant, one constitutionally weak due to lack of care during intra-uterine life is not an asset to the state but a charity.

Dr. Rachel Yarros wishes to emphasize the fact that at least 20 to 25 per cent. of all the blind can be directly traced to gonorrhea and syphilis, a very important point in a discussion which aims to educate the public. The time has come when the dangers of gonorrhea and syphilis in regard to eyesight should receive free and frank discussion by the medical profession and the laity. This is the main object of all the societies of social hygiene.

As to the question of the relation of midwives to the preservation of vision, I want to state that of the probable 50,000 births yearly in the city of Chicago, we find that about one-half are presided over by midwives. While we are making great efforts to improve the theoretical and practical courses in obstetrics in the colleges, which means furnishing the middle and better classes with more competent physicians, nothing is done in Illinois to furnish the large population with competent midwives, which they persist in employing, regardless of the danger to the mother and child.

We have not a single qualified school for the training of midwives or offering a postgraduate course to those who have been in practice for years. By ignoring their existence, we have failed utterly to abolish them. Would it not be wiser to follow the European plan by giving them proper instruction, as well as to bring them closer under the supervision of physicians?

IMMUNITY IN AND THE SPECIFIC TREATMENT OF PNEUMONIA*

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Although lobar pneumonia is a disease characterized by a very definite clinical picture and pathology, the fundamental questions of how the pneumococcus gains entrance, the mechanism of intoxication, and how the infected host rids itself of this microorganism are still quite obscure.

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In the following pages I wish to give very briefly some of the more important facts which bear on these and allied questions.

That certain important changes which render us susceptible to virulent pneumococci (which we harbor most of the time) take place in the serum of the patient is indicated by the observation which I have made that pneumococci produce acid by growth in the serum obtained during the initial chill, whereas in normal serum the reaction remains normal.

Phagocytic Immunity.—The reason why non-virulent pneumococci are not able to cause infection seems to be due to their prompt destruction by leukocytes when injected into animals. Virulent pneumococci, on the other hand, and on this point all authors agree, are resistant to phagocytosis *in vitro* and when injected into animals. This resistance to phagocytosis, the subject of a special study some years ago,[1] seems to be due to a substance, "virulin," which goes into the sodium chlorid solution during autolysis. The pneumococci from which it has been extracted are now able to absorb opsonin from serum and are rendered phagocytable. While the part which goes in solution neutralizes opsonin and is taken up by certain strains of non-virulent pneumococci, rendering them relatively resistant to phagocytosis and virulent again. It has been shown that the pneumococcidal power of pneumonia or other leukocytic blood is proportionate to the number of leukocytes present and the opsonic power and is due to phagocytosis and intraleukocytic destruction. Wolf,[2] Potter and Krumwiede,[3] De Marchis (F.)[4] and others have shown that the opsonic index to pneumococci, while below normal early in pneumonia, is above normal and at its greatest height at about the time of crisis in cases with a favorable termination, while in overwhelming infections the index remains persistently low. Observations on the opsonic index during experimental pneumococcus infections in animals show a similar course — in those which recover the index goes well above normal after an early negative phase, while in those which succumb it remains persistently below normal. From these observations it is clear that the opsonic index may be looked on at least as an index of resistance offered by the infected animal. As further evidence in favor of this form of immunity in pneumonia the following facts must be mentioned:

I have found that leukocytes from pneumonia during active leukocytosis are not only more active phagocytically, taking up more pneumococci than normal leukocytes under the same conditions, but they take up pneumococci of a higher grade of virulence. Tunnicliff,[5] in an extensive study of this point, has found that the phagocytic power of the leukocytes in mild cases of pneumonia is increased. In severe cases, on the other hand, it is diminished while the severe symptoms are present, but when the patient improves, it rises above normal. Eggers (personal communication) has very recently shown that there is a very close relation

1. Jour. Infect. Dis., 1907, iv, 285.
2. Jour. Infect. Dis., 1906, iii, 731.
3. Jour. Infect. Dis., 1907, iv, 601, and Jour. Am. Med Assn., Nov. 30, 1907, p. 1815.
4. Lo Sperimentals, lxii, 681.
5. Jour. Infect. Dis., 1911, p. 302.

between the antipneumococcal (phagocytosis and intraleukocytic destruction) power of the blood and the clinical symptoms in pneumonia.

In this connection the observations of Mennes[6] should be mentioned. He observed that leukocytes in normal serum behaved indifferently toward certain virulent pneumococci, while after adding immune serum the cocci were taken up rapidly.

Clinical observations in pneumonia and studies in experimental pneumococcus infections indicate that leukocytes in some way play an important rôle in destroying pneumococci. The amount of phagocytosis in pus due to the pneumococcus or in the consolidated lung in pneumonia even during crisis is never very great. These and similar observation and the fact that virulent pneumococci are resistant to phagocytosis *in vitro* are used by some as arguments against the idea that phagocytosis plays an important rôle in combating pneumococcus infections.

The above observations certainly speak in favor of the view that certain primary changes take place within virulent pneumococci before they are phagocytable *in vivo*, just as has been found to be the case *in vitro*. The later phagocytosis and intraleukocytic digestion nevertheless is probably an important means by which the body destroys pneumococci and their toxic products.

Bactericidal Immunity.—All observers who have studied the effect of pneumonic serums or other pneumococcus immune serum on pneumococci have come to the conclusion that they possess no demonstrable pneumococcidal powers. Pneumococci grow equally well (as determined by the plate method) in pneumonic serum at all stages of the disease as they do in normal serum. In an attempt to find out whether the pneumonic serum might not have effects on the pneumocci which are not brought out by the plate method I have made a microscopic study of the pneumococci at the same time, and found that both an increased rate of growth and death of the pneumococci takes place in pneumonic serum.

In a further study of the effect of pneumonic serum on virulent pneumococci as compared with normal serum the interesting observation has been made that ether-killed pneumococci disintegrate more rapidly in pneumonic than in normal serum.

Antitoxic Immunity.—The phenomenon of crisis would seem to be best explained on the ground of the development of an antitoxin. Neufeld and his associates found that pneumonic serum during crisis has distinct protective powers against pneumococcus infections in mice. The protection was limited largely to the homologous strains. Keyes[7] has found that injections of large amounts of pneumococci into insusceptible animals — the barnyard fowl — yields an immune serum which has a definite protective and curative power over pneumococcus infections in white mice. Other observers have had similar results. The mechanism of the protection afforded by immune pneumococcus serums in these cases is not entirely clear but it is probably not a direct neutralization of toxic

6. Ztschr. f. Hyg., 1897, xxv, 413.
7. Jour. Am. Med. Assn., 1911, xvi, 1878.

substances as is the case in diphtheria antitoxins. Straus, S. (*Jour Exper. Med.*, 1911, xiv, 109), and others, on the other hand, have not been able to confirm Neufeld's results.

Anaphylaxis in Relation to Pneumococcus Products and Infections.—The relation of anaphylaxis to lobar pneumonia and allied questions has been discussed recently;[8] only a few brief statements are necessary here. The experimental facts, there given, prove quite conclusivley that virulent pneumococci possess all the essential properties to cause intoxication forthwith without first sensitizing the animal as some would have us believe. On the other hand, some evidence has been brought forward in favor of the view that in certain cases of pneumonia (those having had a previous cold for a week or ten days) the onset may be due to the development of the anaphylactic state at this time and that crisis occurs when the patient becomes antianaphylactic. This idea is in keeping with the well-known fact of a very transient immunity in this disease. For the experimental facts on which these statements are based the reader is referred to the paper cited above.

The Specific Treatment of Pneumonia.—Two methods are at our disposal: passive immunization by the injection of so-called anti-pneumococcus serums in which we presumably inject preformed antibodies, and active immunization by the use of heat-killed pneumococci or other products of pneumococci in which we attempt to hasten the formation of antibodies in the patient. As shown above, various observers have been able to obtain antipneumococcus serums which protect animals against pneumococcus infections to a certain extent but when used in the treatment of lobar pneumonia they seem to fail. The literature contains numerous references to favorable results obtained by the use of various serums, but on studying the reports the number of cases treated is too few or some other factor has not been ruled out so that the seeming favorable results are to be explained largely on the ground of coincidence. The hope of obtaining a sufficiently active immune serum is small in the light of our present knowledge.

The value of inoculation of dead bacteria or vaccines in acute infections in general is questioned by many. The conditions at hand in lobar pneumonia are such that the hope of accomplishing much is quite small. It is well known that the injection of heat-killed bacteria causes first a negative phase in the opsonic index and then a rise above normal; the curve differs only slightly from that obtained in lobar pneumonia with recovery. The practical tests show no noteworthy decrease in the mortality.

For a number of years I have attempted to separate from pneumococci the toxic from the antigenic component. In this work I have been aware of the fact that many experimental facts suggest strongly that these are one and the same substance. I have, however, been able to separate from virulent pneumococci a large part of the toxic material which goes into solution on autolysis and have left in the pneumococci that part which

8. Jour. Infect. Dis., 1911, ix, 190.

stimulates antibody formation more promptly and more energetically without first producing a negative phase. The number of "detoxicated" or autolysed pneumococci inoculated can now be much greater than those merely killed by heat. When this material is inoculated within forty-eight hours after the onset of an attack of lobar pneumonia the course of the disease is often seemingly much modified. The temperature comes down within twenty-four or thirty-six hours and the patient recovers promptly; when given later, as would be expected, the effect is less pronounced. It is very difficult to draw conclusions of the value of any remedy in lobar pneumonia. In a series of cases at the Cook County Hospital last winter fifty treated and fifty alternate untreated cases, used as a control, the mortality of the former was 32 per cent., while in the latter it was 50 per cent.

I wish here to express my appreciation to the attending staff for the cases, the house staff for cooperation, to Dr. Hektoen for suggestions and the aid of Drs. Harms and Riley.

The number of cases is, of course, too small to draw conclusions; the results obtained look hopeful especially when one considers the most unfavorable conditions under which the work is done. The injections were nearly always made late, the type of infection was very severe and the kind of patients the worst possible to try any form of treatment.

The work is being continued. I have on hand a considerable quantity of material and would gladly let anyone have it for the asking. I must emphasize, however, that you do not wait until your patient is overwhelmed and the mechanism of immunity paralyzed, because then no amount of stimulation of antibody formation can do much good. The importance of using this antigenic substance early cannot be too strongly emphasized. It should be injected within twenty-four hours of the initial chill, if possible. It has been used so many times that I can vouch for its harmlessness.

DISCUSSION

Dr. W. S. Harpole: In the discussion of anaphylaxis several things occurred to me which I would like to have Dr. Rosenow answer. He referred to the respiratory difficulties produced in animals by anaphylactic phenomena. What animals did he use? Different animals, the dog, rabbit and guinea-pig, for instance, have been shown by Auer to die from distinctly different symptoms when they die from anaphylaxis. The guinea-pig has respiratory difficulty most pronounced and dies from it. The acute cases of anaphylaxis in man have seemed to show that form of death predominating. Of course, the opportunities of studying these phenomena in man are infrequent, but the resemblance between man and guinea-pig in that respect is interesting. The rabbit dies from acute rigor of the heart, especially of the right ventricle, and the dog dies from a rapidly falling blood-pressure.

Then I would like to ask the doctor whether he regards the phenomena following the injection of autolyzed pneumococci as anti-anaphylactic in character. Some of the animals that do not die from acute anaphylaxis show no anaphylactic phenomena on subsequent injection.

Another question I want to ask is, if the autolyzed pneumococci are used as a vaccine, why would it not be as valuable to use the non-virulent organism, as is being done in the manufacture of vaccines against typhoid and other diseases. They answer as well in establishing immunity as the virulent ones.

Dr. Rosenow (closing): My experience with anaphylaxis is limited largely to the injection of products of the pneumococcus. As to the cause of death in the animals mentioned it has been shown that it is different in the various animals. It is true that respiratory difficulty is shown most profoundly by the guinea-pig, moderately by the dog, and still less by the rabbit. The guinea-pig behaves most like man as far as anaphylaxis goes. The symptoms of anaphylaxis in man following the injection of horse serum are those of respiratory difficulty.

In a recent paper I discussed the question of anaphylaxis to pneumonia and, as stated, pointed out that the time of the initial chill might correspond to the time when the patient has become sensitized to the pneumococcus. In lobar pneumonia the initial chill frequently occurs after a severe cold or bronchitis has existed for a week or ten days. Experimentally I have shown that the repeated injection of dead pneumococci takes away this sensitiveness in guinea-pigs. Also that an animal after a marked but not a fatal reaction to a pneumococcus extract is no longer sensitive. The sensitiveness disappears too when the animal passes through a pneumococcus infection. Hence the crisis may be an expression of the development of anti-anaphylaxis. Wolf has shown that the injection of non-virulent pneumococci is not followed by demonstrable rise in opsonin. I have tried to immunize animals with non-virulent strains of pneumococci without success.

The viscosity of the blood is increased especially when the symptoms are very pronounced. Large doses of potassium iodid as well as small doses have been given with the idea of lessening the viscosity of the blood and favoring its circulation. The increased viscosity of the blood probably does not materially affect the mortality. However, every effort should be made to reduce the toxemia because that is really at the bottom of the trouble. Elimination does help somewhat and I take exception to the statement that there is nothing to do for the pneumonia patient. A pneumonia patient properly cared for along the lines so admirably laid down by Dr. Babcock, stands a better chance of getting well than the patient who is left to himself.

A CONSIDERATION OF A FEW POINTS IN THE GENERAL MANAGEMENT OF PNEUMONIA*

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We all see cases of this dreaded disease in which the balance between the individual's resistance on the one hand and the onslaught of the invading organism on the other is so evidently on the side of the patient that the most we are required as practitioners to do is to let Nature fight it out with only such aid as good nursing may afford. There are other cases in which the patient is overcome from the start and we are powerless to avert the disaster by our most skilfully employed means. Others again there are in which the forces of resistance and attack seem so evenly balanced that the result may be said to depend on the skill of the physician in rendering assistance at just the right time or in proper degree. It is of course with regard to this last group of cases that I have ventured to offer my remarks this evening.

So much has been written and said in respect to the benefit of fresh, cool air for pneumonia sufferers that the public has become accustomed to this notion and physicians no longer or but rarely have to overcome prejudice in favor of closed windows, overheated atmosphere, and a mass

* Read at a meeting of the Chicago Medical Society, Dec. 20, 1911.

of bed-clothing reinforced by the cotton jacket. In other words, the hygiene of the sick-room is so well carried out ordinarily that to dwell on it now would be an insult to so intelligent a body of hearers. There is only one point in this connection which it may be well to emphasize, namely, the advisability of destruction of the sputum and of protection both of the patient and of his attendants against infection through the microorganisms ejected by the act of coughing and eliminated by the excretions. The better ventilated the room, the less the liability to infection from this source and yet scrupulous cleanliness of the patient's face and hands and adequate destruction of the sputum together with proper care of the urine are none the less advisable.

I shall say nothing in particular as to the diet further than to urge that it be mainly or exclusively liquid and of such a kind and given at such regular intervals as will diminish the likelihood of flatulent distention of the gastro-intestinal tract. Since free hydrochloric acid is said to be lessened or even absent in temperatures above 101.5 F. it is well to administer this acid regularly after the ingestion of food, even milk. In this connection let me insist on the exhibition of as large quantities of water as the patient can tolerate without actual distress.

With aged persons or those whose kidneys cannot excrete large quantities of water care should be exercised lest the vessels be overfilled and the heart overstrained. But if the kidneys are functionally competent too much fluid can scarcely be taken, since the better the elimination the better should be the prospects.

Much medication is not desirable for several reasons, and yet it may be well in some cases to stimulate the excretory organs by simple diuretics and diaphoretics such as bitartrate or citrate of potassium and when blood-pressure is high the sweet spirit of niter. A cathartic daily is advisable and in my opinion a saline aperient water is best, provided it does not occasion too much flatulence.

Nitroglycerin or other nitrite preparations should never be ordered as a routine practice. The effect of pneumococcus poisoning on blood-pressure seems to vary in different cases. Consequently the sphygmomanometer should be used daily if possible and the use of vasodilators and heart tonics governed by the readings of the instrument. Should cyanosis become unusually pronounced and according to the experiments of Romberg and Paesler indicate threatening capillary paresis from the toxic effect of the poison on the vasomotor center in the cord, then vasodilators are distinctly contra-indicated and adrenalin or cardiac stimulants, as digitalis, are to be used and used freely. This indication is especially urgent if Gibson's danger sign is present, namely, a pulse-rate whose figures are higher than those of the blood-pressure. Death may not supervene in all such instances, but this condition calls for prompt and vigorous treatment.

Pain is in some cases so distressing as to demand special measures for its mitigation lest it rob the patient of rest and augment his exhaustion. When local applications do not relieve the physician should not hesitate to administer a hypodermic of morphin since unless plainly

contra-indicated by diffuse bronchitis it is likely to do far more good than harm. Years ago when beginning practice in Chicago I had occasion to utter this statement at a meeting of this Society and was severely criticized by a well-known practitioner and teacher on the ground that morphin did harm by checking bronchial and other secretions. Nevertheless I believe my position in this matter is a correct one and that physicians of experience will support me in this opinion. It is generally in the later stages of the disease that opiates are likely to prove harmful and yet even then no hard and fast rule should be laid down.

Objection is sometimes raised to the administration of morphin in the aged on the ground of its checking renal excretion, but most old subjects have arteriosclerotic kidneys rather than a true interstitial nephritis, and when such is the case morphin judiciously exhibited, by allaying pain and restlessness, proves no less a boon than in young adults. In children of course pain must be allayed by some other means than hypodermics of morphin, but when external applications soon to be mentioned are not effective codein either alone or along with a bromid has proved highly satisfactory in my hands.

In advocating the employment of an opiate for relief of distressing pain I do not forget or wish to ignore the usefulness of local applications either in form of sinapisms, poultices or the ice bag. Although an ardent advocate of cold to the chest in pneumonia both for relief of sharp pleuritic pain and reduction of high temperature, still I must admit that in some instances heat is far more effective as an analgesic and is more acceptable to the sufferer. Nevertheless I believe the ice bag should always be tried and given the preference since it tends to quiet the nervous system and keep down fever. The application of some of the pastes, notably antiphlogistine, of which some physicians are so fond, is to my mind extremely objectionable on several grounds. Doubtless some here will advocate its use, but I believe just as much can be accomplished by far less objectionable and nasty means. Strapping the painful side is often an extremely beneficial measure when properly done and should not hamper respiration to any harmful extent. It is really a more effective means of accomplishing just what the patient tries to do by his superficial and rapid breathing. Whatever the means employed they are hardly likely to do as much harm as the continuance of the symptom, and it cannot be too strongly insisted on that the ultimate outcome may depend largely on the physician's skill and judgment in combating dangerous symptoms.

Insomnia is another symptom which in some instances is so persistent as to constitute a veritable complication of evil influence in prognosis. Early in the disease this wakefulness is due to pain or pyrexia, whereas later on it is a result or expression of toxemia and exhaustion. Ordinary hypnotics rarely accomplish the result desired so satisfactorily as morphin or some other form of opium. It is my conviction therefore that an opiate, by preference a hypodermic of morphin, not only will induce sleep but exerts a salutary and calmative influence on the nervous system and thus favorably affects the course of the pneumonia.

When insomnia is due to fever it is rational to endeavor to induce sleep by reducing the temperature. Accordingly sponging with cold water or in children a bath or the application of an ice bag is to be tried and sometimes may promote the desired sleep. When this fails, however thoroughly done, then in my opinion an opiate is indicated. When later in the disease persistent wakefulness is a result of the toxemia, the question of how best and most safely to induce sleep may become a difficult one to answer. At this time there is often more or less associated bronchitis, and when this is present, remedies which, like opium, obtund the sensibilities and inhibit cough and expectoration, must be used, if at all, with great caution. Now it is that stimulants are likely to render valuable assistance. A wine rich in ethers and not containing so high a percentage of alcohol as whisky should be selected, and such a cardiac stimulant will often promote rest and some degree of sleep. But should exhaustion from insomnia seriously threaten the patient and bronchitis be not pronounced, then a hypodermic of morphin (one-eighth of a grain), which is not strongly narcotic, will be likely to do much good even if it does not cause sound sleep. Morphin at this time seems to me preferable to heroin either by mouth or under the skin since it does not so profoundly quiet the cough. According to my experience the usual hypnotics, veronal and the like, chloral and bromid, do not prove efficacious in conditions of toxemia of whatever nature, and hence I rarely prescribe them in pneumonia.

Tympanites is another symptom that at times proves a very serious complication. In some instances this abdominal distention is caused by fermentation of the food, and when this is the case it may usually be relieved by dietary change or restriction according to the judgment of the medical attendant. Cathartics, enemata and turpentine stupes on the abdomen are well-known measures in this condition. But occasionally meteorism is a manifestation and result of toxic paresis of the intestines and is a formidable condition. In some instances it resists all attempts at its relief, but I desire strongly to recommend so soon as this form of tympanites is suspected the use of an enema of asafetida made by rubbing up 75 grains of the drug in 3 ounces of yolk of eggs. This emulsion thrown high up into the colon often acts as a powerful stimulus to contraction of the bowel, and I recall one case in which this remedy appeared to overcome what gave promise of being a most serious and rapidly forming meteorism.

Collapse is not of frequent occurrence in pneumonia, yet is so alarming a condition that one should always be on the lookout for its early detection and should have suitable remedies at hand. Since a deceptive fall in peripheral temperature may usher in the collapse, it should be an invariable rule to have the temperature recorded by rectum, not by mouth or axilla. So soon therefore as coolness of the surface, increasing cyanosis and weakness of the pulse lead one to suspect approaching collapse, prompt and energetic measures should be instituted in the hope of warding it off. We may not be able always to combat it successfully, but its prompt recognition and an intelligent appreciation of indications may aid much by wisely directing the means to be employed.

Stimulation is now required and must be used often and vigorously, and to this end nerve and heart stimulants not vasodilators are necessary. It is not my intention to describe in detail the treatment suitable in collapse, but I desire particularly to urge the use of the asafetida emulsion previously mentioned, the same as for relief of tympanites due to intestinal paresis. This good old-fashioned remedy has fallen largely into disuse, for few seem to appreciate how powerful a stimulant it is to the nerve centers and hence to circulation and respiration. In addition to the injection of the emulsion of asafetida, heat to the surface and a drink of hot coffee, hypodermics of musk and perhaps of camphor are highly serviceable. So great is my faith also in musk as a cardiac stimulant that I always keep it in reserve in cases of pneumonia. The formula for its preparation is as follows: good Tontine musk, 1 gm., benzoate of sodium 0.5 gm. and distilled water 15 c.c., of which the dose is 15 to 30 minims (1 to 2 grains of the musk) injected beneath the skin. As this drug is difficult of solution and requires slow filtration to rid it of impurities, a certain pharmacy in this city is kind enough to keep a solution always in stock and sells it at a reasonable price, about 10 cents a grain instead of a dollar as is charged by many druggists.

In urgent cases this remedy is injected hourly and in my hands has proved a powerful cardiac stimulant. I do not approve of nitroglycerin in this condition or of whisky or brandy on account of their high alcoholic content, since arterial tension is already low and what is needed is a remedy that acts directly as a cardiac stimulant instead of indirectly through relaxation of the vascular system. If necessary camphor hypodermically may also be used and if the pulse becomes very rapid and weak caffein or digitalis may be thrown under the skin or into a vein. But caution must be exercised if this latter remedy has been taken throughout the course of the illness.

I have had no experience with the intravenous injection of strophanthin from which such remarkable results have been reported in the east. It is highly dangerous if digitalis has been taken previously because it so powerfully reinforces the action of the foxglove, and as most of my cases of pneumonia nowadays are seen in consultation I generally find present this contra-indication to the intravenous administration of strophanthin.

I have tried a hypodermic injection of atropin in collapse, but have not been able to perceive any pronounced or lasting effect from this remedy any more than from nitroglycerin, and probably for the same reason, namely, that the circulation requires a powerful cardiac rather than a vasomotor stimulant, by which is meant a drug that acts on the heart directly rather than one that dilates the capillaries and thus indirectly urges the heart to more rapid and vigorous contractions. It might seem that this principle of management contra-indicates the application of heat to the surface of the body. But heat does something more, as it seems to me, than merely dilate the superficial vessels. It creates a sensation of warmth and stimulates the nerve centers and thus reinforces the effect of cardiac stimulants. It is well to caution the nurse, however,

against the use of too great heat or its too prolonged application to one part. The capillary paresis responsible for the collapse or at least so important a factor in the condition, renders the skin very liable to burn, and ignorance of this possibility caused in a case seen by me quite extensive burns. Finally, in combating the collapse of pneumonia the attendants should keep up their efforts as long as life continues, for we may be surprised sometimes by recovery even after long-continued efforts seem unavailing.

In concluding these remarks, which I am conscious do not present any new or startling features, let me urge the importance, nay necessity of close watch of every pneumonia patient by the physician. Changes for the worse may come so quickly and unexpectedly, even when the case seems progressing favorably, that the doctor should see the sufferer frequently and should keep in close touch with the case through telephonic communication with the nurse. On signs of approaching danger, such as fall in blood-pressure, and at the time of crisis this is especially imperative, and if need be the physician should not hesitate to remain in the house over night. In no acute disease are good nursing and intelligent care by the doctor so necessary as in acute pneumonia. Moreover, the time for medicines, nourishment, etc., should be so ordered that the patient may be disturbed as seldom as possible.

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DISCUSSION

Dr. E. F. Wells: This paper deals largely with facts and experience. Every point made with regard to the management of pain meets with my approval. It is in the details of the management of pneumonia that success or failure will be attained. There are some conditions in pneumonia in which morphin cannot be replaced by any other drug. At the very beginning of the illness there is a stage of excitement, which may seem independent of pain and which can be relieved almost magically by morphin. The dose need not be large nor even dangerous. It is surprising how small a dose will relieve the nervous system and dispel the pain in the very first hours of the attack. One-eighth or even one-twelfth may be given and repeated after an hour or two, if necessary. Personally, I very much prefer small doses, repeating, if necessary, rather than to give a large dose which might be harmful. The repose, the re-enforced fortitude which can be given the patient can scarcely be realized unless one has observed these cases.

The pain in pneumonia early is ordinarily attributed to the involvement of the pleura. Experience shows that the pain is sharpest at the onset or shortly afterward, certainly during the first day. On the second day, without morphin or any application, the pain is materially reduced in acuteness and on the third day it is much reduced. Unless there is extension of the pleural involvement the pain is not very acute. So that we should not attribute all the relief from the pain, especially on the second or third day, to any morphin which may have been given, or to any other measures to which recourse may have been had. It is seldom following the initial use of morphin that it will be required for several days.

A very frequent cough may require minute doses of morphin, 1/16 of a grain, hypodermically. Later on when the insomnia appears, morphin, combined with stimulants, will often induce sleep when the ordinary hypnotics fail. Late in the disease, when general failure is imminent, a small dose of morphin is the most powerful stimulant, and it is my belief, as was stated by Dr. Babcock, that it will often turn the scale in the right direction.

It is useless to try to stimulate a dying patient with morphin. When a patient has been lying awake two or three nights, obtaining no sleep day or night, morphin will not perform the same miraculous effects which it may at the beginning of the insomnia. Further, the giving of morphin from first to last, keeping the patient in a semicomatose condition all the time cannot be otherwise than pernicious. The age of the patient should lead to a careful consideration of the dose of morphin, but not necessarily to its disbarment from either end of life. In the case of the child a few drops of paregoric will often be sufficient. The child does not manifest the same pain as the adult. The same applies to senile cases. The pain is remarkable for its slight degree and often for its absence. So that in my opinion, if it is required, it should be given but with discrimination. I am sure that if these small doses are given and the effect watched, the use of quarter grain, half grain or even grain doses will not be resorted to.

Passing along to the management of collapse or profound toxemia and depression, the close attention which will anticipate the checking of these will lead to success, even when the same measures used when the condition is well advanced will lead to failure.

As to prevention. There can be no question as to the evil influence of intestinal stasis. Therefore, immediately on entering on the management of a case of pneumonia I attempt to clear the intestinal tract and keep it clear. The patient's bowels are moved regularly, certainly twice a day and oftener if required. The patient is placed on a light diet and then these movements may be obtained by simple laxatives or by enema or glycerin suppositories I direct that a simple laxative be given once a day, and that another movement be obtained ten or twelve hours afterward by the use of an enema or suppository. The enema should be stimulating. The glycerin and epsom salt enema, in my opinion, is the best, however not in the 2-2-2 preparation of the hospital, but 2 ounces of epsom salt, two ounces of glycerin and twelve ounces of water. It will exercise the stimulating effect that the intestine requires. I have never seen it fail. That will keep up peristaltic movement and prevent distention.

Strychnia is probably a useful remedy, one-thirtieth grain, every three hours, used throughout the disease, and especially if there is any tendency to a paretic condition of the intestine. Salol in small doses cannot have any effect, but a grain, every two or three hours, will prevent that foul condition of the intestines which sometimes occurs. I use it when there is the slightest indication of foulness of the discharges.

In the final stages of the disease, when things are taking an unfavorable turn, there again the early use of stimulants is the keynote to the situation. Oxygen, of course, has been decried, but I use it, although early before its use appears to be necessary, and certainly with the slightest indication of cyanosis or where the arterial side of the circulation becomes collapsed at the expense of the veins. Then I make use of it more or less freely. Digitalis I usually recommend from first to last, an efficient preparation in moderate doses. With that you will have prepared your ground for the prevention of collapse and those frequently fatal conditions occurring late in the disease.

As to the use of stimulants. I am heartily in favor of them, although I would anticipate their necessity by the use of the preventive measures mentioned. Musk I have seen used and largely, especially in my early practice, and I have thought it to be useful. It is, of course, difficult to determine the value of any remedy in these advanced cases. I am quite sure that no measure will prevent the completion of death once started.

The various local applications mentioned I have dispensed with. I see no advantage in their use, except for the comfort of the patient. If he prefers hot applications, I see no objection; if he prefers cold, I use it. The heart is made very comfortable by the use of an ice bag, but cold has not given much relief from the pain. Close observation by nurse and physician are the most essential things in these cases, as was emphasized by Dr. Babcock. Constant vigilance is important

in every case of pneumonia and there should be no hesitancy on the part of the patient in maintaining constant attendance.

Dr. Edward H. Ochsner: It is a well established fact that one of the best therapeutic agents in all forms of infection is absolute rest. I have often wondered why this agent is not made use of more often in pneumonia than it is. We have all seen chests strapped in pneumonia, but rarely have we seen them strapped effectively. I think one reason that strapping is not used more is the fact that medical men as a rule are not aware of the fact that the chest can be rendered as immobile as most other regions of the body, and if rest is good for an infected hand, it is also good for an infected lung. One of the greatest benefits of rest in infection is the prevention of septicemia. Staphylococcus and streptococcus septicemias are bad, and so is a pneumococcus septicemia. If the first two can be greatly reduced by securing proper rest of the infected part, I believe that a pneumococcus septicemia can also be prevented to a great extent by immobilizing the chest involved.

Professor Hall of this city some years ago invented a chest pantograph, and any one can use it to determine whether he knows how to immobilize a chest. I have made the experiment many times on strong robust individuals and have found that the chest in health can be very nearly immobilized, but you must go at it in a systematic way. The first strap must extend about two inches below the last rib and two inches beyond the middle of the spine behind and the middle of the sternum in front. The straps must overlap, using four layers of straps, one across, two diagonally and one from above downward and over the shoulder. A chest so strapped is practically immobilized.

The two forms of rest usually employed are rest of the whole body and rest of the infected part. We can accomplish body rest by recumbency in bed and rest of the part by strapping or by a splint. For something like fourteen years I treated all cases of pneumonia in this way. I have seen some desperate cases following gall-bladder operations, and such cases are about as desperate as one can get. I observed that proper rest will greatly reduce the mortality, and by proper strapping in the majority of cases the patient will get well by lysis and not by crisis.

In the ordinary case of pneumonia the patient forces into his circulation at one and the same time with great rapidity both the toxins and antibodies. If the rapidity with which the toxins are forced into the circulation is reduced, as I believe it can be with chest immobilization by proper strapping, the patient will be immune before he or she is overwhelmed with the poison. He will not as a rule suffer from nearly as great restlessness, intoxication or septicemia as if proper strapping is neglected.

Dr. F. Tice: I am not in sympathy with local applications in pneumonia. Pneumonia is a systemic infection and therefore cannot be materially influenced by any local application. No one would think of making a local application in typhoid with the idea of influencing the course of the disease. It is a systemic infection analogous to the infection of pneumonia.

Occasionally it has been customary to employ strapping of the chest. It has been my experience in some cases that such strapping produces such dyspnea that the straps had to be removed. The use of straps and the ice bag and the coil have given way to small doses of morphin. There are so many conflicting things in the treatment of pneumonia that every one has developed his own method of treatment.

The active treatment of pneumonia resolves itself practically into the fighting of a toxemia. It is admitted that death in pneumonia is due to cardiac failure, but not from cardiac involvement. The toxemia produces a vasomotor paresis, and it is to this that we direct our special attention in treatment. We cannot limit the amount of toxins produced, nor can we neutralize the toxins after they

are produced. Consequently, we must direct our attention to the evil effects of the toxins, which means, in the majority of cases, cardiovascular failure. Therefore, we use digitalis, frequently by the intravenous method, using digalen or digipuratum, with occasional doses of atropin.

Dr. Babcock (closing): It was not my intention to discuss the management of pneumonia in detail or the various remedies which may be employed or have been employed. I heartily concur with what Dr. Tice said with reference to the danger of cardiovascular failure, and it was for this reason that I dwelt especially on the use of certain cardiac stimulants rather than on remedies which act on the heart indirectly as vaso-dilators. I deplore the routine employment of nitroglycerin; it is for this reason that I advocate, when stimulation is required from threatened exhaustion or insomnia from exhaustion, a good wine rather than whiskey or brandy. The latter have so high an alcohol content that they act as vaso-dilators, whereas claret and some other wines rich in ethers, are true cardiac stimulants and are low in alcohol content. In my opinion these render decided service. It is because of this action on the blood-vessels that I mentioned the remedies I did. Musk is a true heart stimulant, the purest heart stimulant. That is why I mentioned digitalis and caffein. I did not mention ammonia, although it is often very serviceable when the patient's nervous system will tolerate it.

DISEASES OF THE HEART AND BLOOD-VESSELS

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CASEY, ILL.

Mr. Chairman and Fellow Physicians of the Clark County Medical Society: The topic under discussion is an inexhaustible subject, and it will be impossible in the time allotted me this afternoon to go into it in detail, and I will of necessity omit some of the rarer affections. In taking up diseases of the heart I will first say a few words on general symptomatology.

Cardiac asthma or dyspnea is commonly the first symptom of heart disease. It is first noticed only on exertion, but in more advanced cases it becomes more or less a permanent symptom, and is usually caused by valvular insufficiency which allows the blood to back from the left side of the heart into the lungs, making pressure on the air vesicles interfering with access of air to the blood, or it may be due to a dilatation of the left ventricle as in senility, or in cases with a contracted kidney.

Palpitation is the next characteristic and frequent symptom of heart disease. It is more common in mitral than in aortic disease and varies in severity, being scarcely noticeable at times, but often very distressing. Slow pulse is often met in heart disease, a pulse of less than forty being termed bradycardia. It usually indicates muscular disease of the heart and coronary arteries, but may be due to deranged nerve control which is usually affected by the inhibitory nerves with their ganglia situated in the heart muscles. Pain is not as frequent a symptom as dyspnea or palpitation, but we have two varieties in heart disease, the dull aching

of mitral disease and the sharp pain radiating down the left arm, as in angina pectoris. Sometimes the patient complains as if the heart were compressed in a vice. So much for general symptoms.

We will now take up *acute pericarditis.* Definition: Inflammation of the serous covering of the heart due to toxic substances in the blood, such as developed in infectious diseases, also in rheumatism and traumatism.

Symptoms: Sometimes chilly sensations, a sense of discomfort in the cardiac region, or sometimes sharp pain with dyspnea. There may, or may not be much elevation of temperature. The pulse is rapid and the patient complains with a general feeling of discomfort.

Prophylaxis: There is not much that we can do in a preventive way more than the ordinary prophylaxis of rheumatism.

Medicinal treatment: No matter how mild a case, the patient must be put to bed and absolute rest, both physical and mental be insisted on. Evacuate the bowels with mercurials and salines, watch the heart closely and if the pulse should become weak or rapid and irregular give digitalis with strychnia. Place ice over the heart and give liquid diet, milk being especially indicated. It is important to keep up the diet for fear of softening of the heart muscles. For pain and restlessness use bromids; if they fail to relieve we have to resort to morphin ¼ gr., hypodermically, with atropin $^1/_{150}$ gr. Valerian preparations are nerve sedatives and cardiac tonics; therefore they should be tried. Counterirritation with cantharides or iodin is recommended by some authors. Personally, I have had no experience with it. Potassium iodid should be given to absorb the exudate. For pericarditis with effusion, the above treatment plus active diuretics to get rid of the fluids. Use cathartics and diaphoretics very cautiously for fear of too much prostration. If the effusion increases with increased dyspnea, surgery should be resorted to. Paracentesis gives marked relief. Authors differ as to the best location to introduce the trocar.

Acute Endocarditis.—Inflammation of the lining of the heart, usually confined to the valves. Two forms: acute, characterized by growth of vegetations with loss of substance in the valve tissue; chronic, a slow sclerotic change resulting in thickening and deformity. These two varieties are also classed as simple and malignant. The simple variety does not constitute a disease in itself, but is found with other affections, such as rheumatism, tonsillitis, scarlet fever and all wasting diseases, such as Bright's disease. The malignant variety occurs as a secondary affection in acute rheumatism, pneumonia and all septic fevers.

Symptoms are very uncertain, ofttimes resembling typhoid or puerperal fevers.

Treatment: Place the patient in bed with ice to the heart, daily evacuation of the bowels with calomel and salines, and liquid diet. If the heart is excitable give aconite and watch the pulse. For the malignant variety find cause and institute a specific treatment. Antistreptococcic serum is valuable in some cases. Arsenic and iron have been highly beneficial and antipyrin is also recommended.

Let us now take up diseases of the valves of the heart, a subject which is very interesting but requires a great deal of patience and skill to arrive at a diagnosis.

We will first consider *mitral insufficiency*. In this the valve leaks, allowing the blood to flow backward during systole, from the left ventricle to the left auricle. The distended auricle first attempting to resist the backward flow hypertrophies, but eventually dilates, and the blood is crowded backward into the lungs, which become engorged. The right ventricle in its effort to push the blood through the engorged lungs hypertrophies, and the pulmonary factor of the second sound becomes louder and accentuated. The thickened right ventricle makes up for this loss of the weakened valve, then the left ventricle hypertrophies and compensation is maintained and the patient apparently suffers no inconvenience. Sooner or later the right ventricle dilates, the tricuspid valve becomes insufficient and the blood regurgitates into the right auricle and thence into the great veins of the neck. The valves of these finally yield, the jugular pulse appears, and the general venous system is engorged.

Causes of insufficiency: Endocarditis and dilatation of the ventricles and large arteries leading from the heart, the valves themselves remaining intact, but being too small to properly close the abnormally large orifice.

Symptoms: First, cardiac asthma, then palpitation and irregularity which means loss of compensation and congestion of the lungs. Dyspnea is a permanent symptom, being sometimes so severe that the patient has to remain in a sitting posture, a condition known as orthopnea. We now have frequent attacks of bronchitis, with blood-stained expectoration. The liver becomes congested, enlarged and tender, and there is also congestion of the mucous lining of the stomach, causing nausea and indigestion. The liver enlargement becomes sometimes very great, and is often the seat of pulsation, and as often the jugular pulse is seen. Both signs are pathognomonic of mitral regurgitation. We also have passive congestion of the kidneys with a scanty urine, high specific gravity, and sometimes albumin and casts. Then comes edema commonly called dropsy, first affecting the feet and legs, then the trunk and face, and finally the pleural and peritoneal cavities.

Physical signs: Inspection shows the apex beat at the left of its normal position in the fifth interspace, sometimes a little lower. It is more forcible and diffuse than in health. This outward dislocation of the apex beat is due to the enlargement of the two ventricles. On palpation there may be a pulsation felt near the ensiform cartilage, caused by systole of the enlarged right ventricle. As compensation gives way the apex beat becomes weaker and irregular. Percussion detects an enlarged area of cardiac dulness. Auscultation reveals a blowing murmur heard in the mitral area, transmitted to the left axilla and under the angle of the scapula.

Aortic Insufficiency.—Symptoms: forcible cardiac action with characteristic water-hammer pulse, headache, insomnia, tinnitus aurium, congestion of eyes and face, precordial pain of a constricting character, or may be shooting pains, extending down the arms, also palpitation and great

anxiety. When compensation ruptures, dyspnea develops with cyanosis and dropsy. If mitral regurgitation is now added, death soon follows. Sudden death is frequent in aortic insufficiency. Inspection shows the cardiac impulse is displaced downward and to the left. Auscultation reveals a characteristic murmur heard at the second right costal cartilage but best heard at the juncture of the sternum with the fourth left costal cartilage.

Tricuspid insufficiency is caused generally by the dilated right side of the heart from pulmonary obstruction or a result of mitral disease, which causes an abnormally large tricuspid orifice.

Symptoms: Venous stasis, jugular pulsations occurring at the same time with the heart's action, cyanosis, dyspnea and obstinate dropsy. Auscultation elicits a blowing murmur at the juncture of the fourth and fifth ribs with the sternum, distinct over the ensiform cartilage, becoming feeble or lost in the left axillary, often associated with a mitral murmur.

Treatment of Valvular Diseases.—Not every patient with valvular defects needs medicinal treatment, but should be warned to avoid excessive exercise, excitement, mental worry and especially anger. But in the more advanced cases, mental and physical rest is imperative. Liquid diet, especially milk, is indicated. Digitalis in some form leads the list in treatment of valvular diseases, a dose of the tincture, 5 to 15 minims, being given every four to six hours. It seems to aid compensation almost like magic, making the irregular intermittent pulse regular. Cyanosis disappears, dyspnea and restlessness give way to a sense of comfort, and the urine is increased. For engorgement of the liver and stomach give large doses of calomel followed by salines next morning. Some authors use strophanthus in preference to digitalis, where the stomach is irritable. Caffein is a good heart tonic, being given in doses of 1 to 3 grains every four to six hours, but is sometimes objectionable on account of unpleasant mental symptoms and insomnia. Some authors use spartein sulphate, ¼ to ½ gr. every three or four hours. It is especially indicated for its diuretic effect. In purely aortic diseases digitalis is contra-indicated because of the full, strong pulse due to hypertrophy of the right ventricle. Tincture of aconite and veratrum with potassium bromid acts pleasantly in such cases with a full and excitable pulse. Of course they should not be long continued. Strychnia is indicated to maintain muscle tone. Arsenic and iron are good tonics.

Treatment of dyspnea: Dyspnea is frequently caused by effusion into the pleural cavity; therefore it is most promptly and successfully relieved by tapping. Hoffman's anodyne, or any of the simple hypnotics are first to be tried, but if necessary use morphin.

Treatment of dropsy: Restrict ingestion of much liquids, and allow milk for nourishment, giving about 3 ounces every two hours. Restrict solid foods until edema disappears. Large doses of Epsom salts every morning greatly aid in the elimination of liquids. Digitalis and nitroglycerin is a good combination in dropsy until free diuresis is estab-

lished. Nitroglycerin aids by dilating the renal artery. Calomel, ½ gr., squills and digitalis of each 1 gr., every three of four hours, is a splendid diuretic. As the dropsy disappears, cautiously increase the milk and return to solid foods. For irregularity of the heart's action, belladonna and nitroglycerin are a good addition to digitalis.

We will now consider dilatation of the heart: This is an increase in size of one or more chambers of the heart, usually the right side, with feeble pulse, cyanosis and exhaustion.

Causes: Bright's disease, alcoholism, bronchitis and overexertion, as in athletics.

Symptoms: feeble pulse, headache, more pronounced in sitting or upright position, cough, disturbed digestion, dyspnea, scanty albuminous urine, vertigo, and finally dropsy of the lower limbs. Auscultation often reveals murmurs, but when they are not present the heart sounds are weaker than normal, and the first sound is sharper in quality than usual.

Treatment: This affection is incurable, but much can be done to temporarily relieve symptoms and prolong life. First indication: steady and control the heart's action and build up the general nutrition. Such drugs as digitalis, nux vomica, caffein, spartein and strychnia are used to meet cardiac symptoms. Iron and arsenic are valuable to build up the general nutrition. The bowels, skin and kidneys must be kept in action with such drugs as calomel, podophyllin, squills, scoparius and potassium acetate. Hoffman's anodyne for dyspnea. Dropsy should be controlled by such measures as have been mentioned in the previous diseases under discussion.

Angina pectoris, commonly called neuralgia of the heart, is caused by the faulty nutrition due to obstruction of the coronary circulation or various valvular defects.

Symptoms: intense agonizing pains in the region of the heart, radiating down the left arm, shortness of breath, feeble pulse, anxious expression, fear of impending death, and cold sweat. Attacks last only a few seconds and usually terminate fatally, but not always. When they do not end fatally the patient is greatly prostrated, with nausea and vomiting, excessive urination and extreme nervousness.

Treatment of the attack: Inhalation of amyl nitrite, 3 to 5 minims, or chloroform, morphin hypodermatically with atropin, and also chlorodyne, nitroglycerin and spartein are very beneficial. Counterirritation over the heart gives some relief. During the interval between attacks endeavor to remove the exciting cause. Observe the diet closely to prevent constipation and flatulency, and also avoid mental worry and physical exertion. For structural changes in coronary arteries give potassium iodid, 10 to 20 gr. three times a day. Give constitutional tonics. Belladonna is indicated to relieve or lessen arterial tension.

Arteriosclerosis: This is a degenerative inflammatory disease of the arteries with calcareous deposits.

Causes: senility, Bright's disease, alcoholism and dissipation.

Symptoms are not always apparent and vary with the different arteries involved. Palpation reveals a hard, beady condition of the vessel's wall.

The patient complains of dizziness, and pseudoapoplectic attacks are frequent. Sclerosis of the cerebral arteries causes attacks of unconsciousness as in cerebral hemorrhage. Coronary sclerosis causes angina and renal arteriosclerosis causes interstitial nephritis.

Treatment: Observe the diet, keep the liver, kidneys and skin active, avoid too strenuous exercise, insist on temperate habits, and give potassium iodid and nitroglycerin in small doses indefinitely.

INGROWING NAILS; ETIOLOGY AND TREATMENT*

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Much has been written in this country and abroad on the subject of ingrowing nails, but inasmuch as the writers have limited themselves to the description of the treatment, I deem it necessary to say an additional word on the etiology of ingrowing nails. I shall touch, furthermore, on the pathology of this condition, which is, in my estimation, worthy of your attention.

The term "ingrowing nails" has been, and is now, used to depict a condition of ulceration occurring at the margins of the nails. In 95 per cent. of all cases I have recorded, the condition is due to other etiologic factors than the mere turning in or malformation of the nail *per se*. The percentage of cases, therefore, due to a congenital idiosyncrasy is proportionately very small. It will be of interest to show you that in 60 per cent. of all cases met with in our daily practice, the disturbance arises from an improper cutting of the nail by the unskilled hand of the patient himself. Feeling some sensitiveness at the edge of the nail, or for economical reasons — fearing that a nail corner may destroy a portion of the oftentimes expensive stocking — the patient will try his dexterity and cut off the nail diagonally, leaving a sharp angle of nail prodding into the toe as the soft parts are crowded against it in walking. In case this abuse fails to set up an inflammation or to incise into the soft parts, thus providing an entrance for infection, the flesh will now be pushed up, by walking and by pressure of the shoe, into the space previously and normally occupied by the nail. As the nail continues to grow and proliferate outward, this angular portion will, of course, exert a pressure on that sensitive — or "quick" — portion of the toe. To relieve this, the patient quickly cuts away some more nail.

This process continues until inflammation, suppuration and ulceration result. Eventually a large, fleshy mass is forced over the nail, and with the exuberant granulations and pus formation he has to all intents and purposes an ingrowing nail.

I further find in 35 per cent. of the cases that improperly fitting footwear (stockings as well as shoes) actually forces or holds the edge of the nail into the soft parts. In this connection I may recall to your

* Read at a meeting of the North Shore Branch, Chicago Medical Society, Jan. 2, 1912.

memories the toothpick-toed shoes of about ten years ago and the pumps of to-day.

The remaining 5 per cent. of the cases are the real ingrowing nails. The etiology is either a congenital idiosyncrasy wherein the nails of all the fingers or toes, or both, have a tendency to curl laterally, or on account of some crushing injury to the matrix which causes a disturbance in the normal reproduction of the nail, and which may result in an hypertrophy developing at any angle or a growing in, up or down, into the toes

The treatment has been more or less fully covered in this country by Howland,[1] Webb,[2] Noble,[3] Keller,[4] Jennings[5] and Breakstone;[6] in Canada by McKenzie;[7] abroad by Ittameier,[8] Reclus,[9] Lehmann,[10] Schwartz,[11] Pasquereau.[12] I shall, therefore, briefly describe the method of treatment I pursue and which has given me splendid results; by this last meaning a permanent cure.

In the first two categories, or those caused by abuse, which represent about 95 per cent. of the cases, I remove sufficient of the nail to relieve the irritation. For this purpose I use a dental chisel that I have modified, having it sharpened on both sides. With this instrument, after thoroughly cleansing the part and rendering it as aseptic as possible, I split the nail clear back to the base and lift out the irritating portion. This procedure seldom makes any additional wound. I then wash out the part with hydrogen peroxid and dry with absorbent cotton. Next I drop in a solution of equal parts of the tinctures of aconite, iodin and belladonna. Aside from the penetrating, antiseptic effect of the iodin, the aconite and belladonna hasten the reduction of inflammation and its concomitant symptoms.

The space is then packed very loosely with aseptic gauze and bandaged with the same material. I usually give the patient an antiseptic solution with instructions to leave the bandage as placed and saturate the entire dressing with the solution once an hour or as nearly that as possible; he is also instructed to keep the foot elevated. I have tried nearly all the solutions recommended for wet dressings, but have found one composed of about 1:3,000 or 1:4,000 formaldehyd the most satisfactory in these

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10. Lehmann: Die Behandlung des eingewachsenen Nagels mit Eisenchlorid, Deutsch. Mil. ärztl. Ztschr., Berlin, 1908, xxxvi, 918.
11. Schwartz, A.: Le traitement chirurgical de l'ongle incarné, Progrés Méd., Paris, 1908, 3s., xxiv, 842.
12. Pasquereau: Traitement de l'ongle incarné, Gaz. Méd. de Nantes, 1909, 2s, xxvii, 195

cases. In this strength it is actively antiseptic without being irritant; it is a deodorant and has a hardening effect on the tissues. The toe is redressed every day as long as there is suppuration. When this ceases, I cauterize with silver nitrate or sesquichlorid of iron, pack in a 20 per cent. salicylic ointment and seal it in with cotton and flexible collodion. This is left in for eight or ten days and removed, when the tags and rough cuticle will have become exfoliated and will peel out like a cast.

The space is kept packed with cotton until the nail has grown out properly, when the patient is instructed to cut the nails square across the ends, parallel to the ends of the toes.

While I always instruct my patients as to the kind and shape of shoe they should wear, this is simply to appease my conscience, as few of them will change their style of shoe for so small a factor as comfort!

In the third class, the actively and chronically (or true) ingrowing nails, the only radical treatment is that of thoroughly removing the entire nail, matrix and all, so that no new nail will grow. The principal care to be exercised is to destroy the matrix entirely, as any particle remaining is apt to give rise to a spur of nail growing out in any direction and causing as much trouble as it originally did.

I experience considerable difficulty in persuading patients to submit to this last named operation, as it necessarily disables them for from four to six weeks, while granulation takes place. But it is a permanent cure.

For this operation I am now using a method suggested to me by Dr. Jacob Frank. By this method, after the patient has been prepared in the usual way, a general anesthetic is given. While this operation can readily be performed under local anesthesia, I prefer to have the patient asleep, as also does Dr. Frank.

An Esmarch is put on around the base of the toe to render the field as bloodless as possible. The nail is now split its entire length and dissected or pulled off with strong artery forceps. A horseshoe-shaped incision is made through the skin down to the cellular tissue, starting a little away from the upper, inner free margin of the nail, carried down the side, across the base and up the outer side of the nail, parallel with and about 1 cm. from the lateral margins and 2 cm. distal to the junction of the base of the nail and the cuticle.

This flap is lifted up and turned back over the end of the toe. The next step is to cut down through the cellular tissue, following the line of the first incision, going clear down to the periosteum. The matrix is then carefully, very carefully, dissected away, the soft parts laid back and sutured in place with catgut. A moist occlusive dressing of 4 per cent. boric acid is put on loosely and left on for twenty-four hours, when a dressing of compound tincture of benzoin is applied and left until it loosens up from the bottom.

If you have a clean case to start with and your asepsis has been complete, the patient should be getting about in two or three weeks. This is cutting the usual convalescence, following other similar methods, in half.

In my considerable experience as a chiropodist, before I became a physician, I have seen dozens of nails that had been operated on by surgeons and with the exception of the very few who had removed the entire matrix, their results were bad.

So I repeat in closing, get all of the matrix and you permanently cure this painfully annoying condition; leave any portion of it, and you have not done much for your patient.

DIAGNOSTIC AND THERAPEUTIC USES OF GONOCOCCUS VACCINE (BACTERIN) AND ANTIGONOCOCCIC SERUM*

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At the onset one must draw a sharp line of distinction between gonorrheal vaccine and antigonococcic serum. They are entirely different substances. The vaccine produces its therapeutic effects by producing active immunity and its dosage is very important, as large doses are toxic and do harm whereas the serum acts by producing a passive immunity and its dose is simply a question of giving enough antibodies to neutralize the toxins produced by the disease in the particular patient under treatment.

The vaccine is used in two ways: first, as a diagnostic agent; second, as a therapeutic agent.

AS A DIAGNOSTIC AGENT

Its first use as a diagnostic agent is in the differential diagnosis of arthritis. The symptoms of a positive reaction are increased temperature and aggravation of all the clinical symptoms, as pain in the joints, increased redness around the joints and a generally worse clinical picture (Irons).

The stick reaction or local reaction at the site of injection is of some importance. In a person free from gonorrheal infection there is absolutely no reaction at the site of injection of the bacterin. In a gonorrheic, however, there is quite a reaction, as shown by redness, swelling, tenderness and pain.

To Diagnose Cure.—Second only in importance to a quick, certain and painless method for curing a gonorrhea is a rapid and infallible method of diagnosing the absence of the gonococcus from a patient after an attack of the disease. In gonorrheal bacterin we have an agent that has been of great value to me in diagnosing the cure. Mention was made of this method in a paper I read before a joint meeting of the Chicago Urological Society and the Chicago Medical Society some time ago, but it has not yet been published.

* Read before the joint meeting of the Englewood Branch and Stock Yards Branch of the Chicago Medical Society, Thursday, Dec. 7, 1911.

Before using this method of diagnosing a cure I experimented as follows:

Smears were made from cases showing only a slight discharge and the gonococcus found, 500,000,000 vaccine was injected, and in every instance the gonococci increased in number in the smears, and usually the stick phenomena were present.

In other patients with a slight discharge, when the gonococci was not found after being searched for every day for from five to twelve days, these patients were injected with 500,000,000 vaccine. This sometimes produced gonococci in the discharge and sometimes not

The cases that did not show gonococci in a week after this injection were injected again and still remaining gonococci-free as far as the smears were concerned and showing no stick phenomena, were declared gonorrhea-free. I have used this reaction in my private practice and I do not know of an instance where a man has been negative to the test and subsequently infected his wife. When you are called on to answer the question: "Doctor, am I all right, can I get married?" use all the old well-known methods and then for good measure give your patient 500,000,000 gonococcus bacterin and a dozen slides. Have him smear before every urination and then next morning report at the office with the smears. These are examined. Continue this way for two to five days and if no gonoccocci are found he is safe.

AS A THERAPEUTIC AGENT

In the acute cases very few men report favorable results; as the cases become chronic, the results of vaccine treatment become progressively better.

The same applies to the acute complications and the chronic complications. The dosage of the bacterin is very important and should be accurately adapted to each patient. In the acute cases dosage as low as a million repeated every day have been given with fair results.

In the less acute cases five and ten millions to start with and increase from one to five millions at each dose, giving the doses every five to seven days. In the chronic cases commence at twenty millions and increase by five to ten millions, giving injections about one week apart.

The bacteriology of gonorrhea by many has been considered a closed book, but every day the fact is being brought out and emphasized that there are other bacteria in gonorrhea beside the gonococcus. To try and reach these cases, mixed vaccines are now used, also the Schafer vaccines; and lately I have been using the crude pus diluted and killed at 60 C. for fifteen minutes and injecting it back into each patient. As far as results are concerned with these methods I cannot state anything definite as yet.

SUMMARY

In acute gonorrhea vaccine has little if any place and is liable to do real harm. In acute epididymitis a single dose of 10,000,000 has cured several cases in two days.

In chronic gonorrhea, either anterior or posterior, the results are variable; some obtain a very rapid cure, others are very prolonged.

In prostatitis and vesiculitis the results are uncertain; some receive great benefit, others none at all. A few have been benefited up to a certain point and remain thus indefinitely.

ANTIGONOCOCCIC SERUM

Antigonococcic serum was introduced by Drs. Torrey and Rodgers. It is prepared by giving a horse an injection of dead gonococci once a week for four weeks and then the injection of live gonococci once a week for five weeks. Their paper reporting their results appeared in *The Journal A. M. A.*, Sept. 14, 1907. These observers then turned this serum over to the department of experimental medicine of Parke, Davis & Co., and this institution after two years of clinical experimentation conclusively confirmed the results obtained by Torrey and Rodgers.

The present status of antigonococcic serum is exactly as Rodgers and Torrey determined; viz., it is of no value in acute gonorrhea, very seldom in subacute gonorrhea, once in a while in chronic gonorrhea and of paramount value in all the conditions due to gonococcic toxemia, the commonest of which is the so-called gonorrheal rheumatism. The serum is bactericidal but to a very slight extent, and hence of little use in actually killing gonococci.

Rodgers divided gonorrheal rheumatism into three groups: acute, subacute and chronic. The acute cases get well of themselves very largely, but usually very promptly with serum. The subacute react to the serum very well, but not quite so quickly as the acute. Of the real chronic cases, some react and some do not. Dosage: From 2 c.c. to 6 c.c. should be given at a dose and the dose repeated every day, every second day or once a week. Personally I believe with Herbst that at least 4 c.c. should be given at a dose.

Complications: There is practically only one; viz., serum disease. It is unfortunate that now they are making the gonorrhea serum from horses.

Serums for the different diseases should be made from different animals to avoid anaphylaxis; viz., horse for diphtheria, goat for gonorrhea, and so on; so if the necessity ever arises for a second administration of serum for a different disease, your patient will not be sensitized to that particular serum.

The treatment of the urticaria is a very trying feature of serum therapy. After all the ordinary means of treatment have been exhausted, apply collodion to the wheals and the itching stops as soon as the collodion contracts. This was discovered by Dr. H. Boettcher as the result of personal experience. I can testify from personal experience with serum disease and its use in a few cases that it is a very efficient method of relieving the itching. Calcium lactate or chlorid internally is of stated value as a prophylactic.

Causes of failure: (1) persistence of the original focus of gonococci; (2) the growth of gonococci in the joints themselves; (3) insufficient dosage.

CONCLUSIONS

Gonorrheal bacterin is of great value as a diagnostic agent; as a therapeutic agent its action is very favorable in some cases; in others there is no change in the patient's condition.

Gonorrhea serum is of very little value for the local lesions of gonorrhea, but for the gonorrheal toxemic lesions its action is excellent.

ON THE TREATMENT OF FRACTURES WITH LANE'S PLATES *

WILLARD BARTLETT, M.D.
ST. LOUIS

My earliest impressions of fractures were gained as a boy in a town not far from the city in which we are so handsomely entertained to-day. For forty years my father carried on a practice in which emergency surgery played no small rôle. Is it then strange that I became impressed early in life by the uncertainties and worries incident to the treatment of fractures in pre-Roentgen days?

In spite of the numbers of cases treated by different surgeons and the exclusion of the field, it must be confessed that the treatment of fractures has to a certain extent been unsatisfactory and productive of dissatisfaction and even malpractice suits. We occasionally see people shockingly crippled as a result of fractures received long ago, and not properly treated under the old methods of surgery. We would probably be astonished to see the results of some *x*-ray examinations of our own old patients in whom we thought we had obtained satisfactory results. We are only thankful that the percentage of cures under these old methods was sufficiently large to hold the faith of the patients and to encourage further development of the treatment of such injuries.

There has been such rapid progress in the development of the surgical treatment of injured soft tissues, that now modern surgery takes no chances with them. The principle of asepsis has made possible the repair of almost every organ and nearly all the tissues of the body. The lungs, the heart and the blood-vessels have been repaired with excellent results; as also have the hollow abdominal viscera, the nerves and other tissues.

Since the principle of asepsis has constituted the foundation on which modern surgery has been built with such wonderful results in operations on all the soft tissues of the body, it seems to be the line indicated for further development in the treatment of fractures. We know of course that there is only a chemical difference between these soft tissues and the

* Read at Springfield, Ill., Nov. 16, 1911, at a dinner tendered the surgeons of the Illinois Traction Company by Chief Surgeon H. M. Bascom, M.D.

body frame-work or bony structure. We know also that the bones present less resistance to infection than do some other tissues; therefore in handling them, greater skill and care must be exercised in maintaining a perfect asepsis. Under such conditions more operating-room experimentation would seem justified now than heretofore, especially when the surgeon of to-day is expected to accord the same measure of anatomic certainty to broken bones, as is taken for granted in connection with other tissues. Even to develop that surgical treatment which has already reached a high degree of specialization, it is necessary to develop the surgical treatment of the bones, since the bones constitute the skeletal frame of the body and enclose the three vital organs.

There are two general principles governing operations on fractures, a consideration of the systemic risk and a consideration of the local risk. It would of course be an act of folly to operate for the purpose of establishing the proper function of some part of the body, thereby unduly risking the life of the individual. Consequently, general health must be considered very carefully in operations for fracture, to be certain that the patient is a good operative risk. As to local risk incurred, there are three very important considerations.

It is positively necessary in the first place that the surgeon who desires to make a success in the operative treatment of fractures, be a skilled mechanic.

Secondly, he must have the proper mechanical equipment for this work, instruments not found in the ordinary hospital outfit. In the early operations which the writer performed considerable mechanical difficulty was experienced in getting into line and keeping in place two parts of a broken long bone while securing them together. In order to meet this difficulty, it was necessary to devise a traction instrument, as traction secured through manual efforts proved both inefficient and uncertain; and also a powerful clamp. This was found to be necessary for the special purpose of lining up the fractured long bone and then holding it in position when properly apposed. The tractor consists of a long screw and a triangular frame almost two feet in length which is bolted to the foot of the operating table in a horizontal position, if the fracture be one involving a bone of the leg. By turning the screw any amount of tractive force can be secured by a cord attached to the end of the screw and the patient's foot. For a fracture near the ankle, two towels are looped around the foot and the cord attached to each. But if the fracture be high enough, a very convenient way of getting traction is to fasten a screw eye to the heel of an ordinary high shoe and attach the cord to this. This traction instrument is a contrivance which any blacksmith can make and is to be recommended for the armamentarium of hospitals where dependence is now placed on manual tractive efforts.

The special instruments which Mr. Lane has devised for use in each part may be placed in position or removed; the clear view of the fracture line at all times; the certainty with which fragments of any shape and size are driven to a common axial center and held until perma-

nently secured. This instrument makes the handling of all fracture cases where the bone ends tend to push out through the wound, much simpler.

The special instruments which Mr. Lane has devised for use in fracture cases are undoubtedly well known. They are a long handled bone holding instrument, elevators, drills and screw drivers. These instruments not only give great leverage but by their length make it unnecessary for a hand to come in contact with the tissues.

This leads me to a discussion of the third important consideration as to the local risk in the treatment of fractures, namely, the asepsis — an asepsis which must be more rigid than any which has been used heretofore in general surgical work. No one has a right to attempt operations for fractures who is not prepared to prevent any exposure of the skin; to keep his gloved hands from ever coming in contact with the tissues or with those portions of the instruments which do not come in contact with the tissues; nor are needles, sutures or ligatures to be handled with other than sterile instruments at any time.

While a large number of proposals for the open treatment of fractures have been advanced, I find myself able to treat every case presented by one of the three following methods: (1) the "metal nail" method, for the head of the humerus; (2) wiring for the patella; (3) elsewhere in the long pipe bones and in the clavicle, the writer has discarded all other methods and now uses only the Lane plate method.

My experience leads me to consider an open operation justifiable in only four conditions: (1) It should be used when one is unable to get the fragments in place by ordinary methods or is unable to keep them held in the proper position. (2) Operations for fracture are especially useful in old cases of non-union. (3) It is of course desirable in all fresh widely open fractures and possibly (4) in chronically infected cases in which the bones lie bare. All compound wounds whether suppurating or not are to be packed and allowed to granulate. Generally speaking, the patient must always be a good surgical risk.

The writer is fortunate enough to have operated on fifty-eight cases in which the Lane plate was used. It was impossible to trace twenty-six from the time they left the hospital and one is too recent to be of value. Thus we have for final study thirty-one end-results. A solid bony union was obtained in twenty-seven of these cases; non-union resulted twice, both of which cases were fractures of the humerus; and two patients died.

As to the condition of the wound of the fifty-eight Lane plate cases, forty-seven wounds healed by first intention; six were infected; two were left open to granulate; and in three instances the history makes no mention of this feature. Only three of the above infections were in clean cases. The local risk, therefore, has been very slight.

Eleven plates were removed, five of them being in simple fractures. Of these, one had compressed the musculospinal nerve; one occasioned a refracture and one was infected at the time of the operation; but as to indications for the removal of the other two, I am not certain, as I did not take them out.

Of the fifty-eight Lane plate cases, there were nine compound fractures. Two of these were suppurating when operated on; three became infected and suppurated after the operation; three healed by first intention; one packed wound granulated up, covering the plate. Bony union was known to have occurred in five, i. e., 55 per cent. An amputation was done in one instance seven weeks after a "Sick" plate had been introduced into a suppurating wound; the result is unknown in three instances. The plate is known to have been removed in six of the compound cases.

The following gives an idea of the number of Lane plate operations performed on the different bones of the body: On the femur there were twelve; on the humerus, thirteen; on the clavicle, four; on the fibula, three; on the tibia, nine; on fractures involving both tibia and fibula, nine; on the olecranon, three; on the ulna, three; on the radius, one; on those involving both the radius and ulna, one. The greater number of failures occurred in operations on the tibia and the humerus. This is of course small, as there was 87 per cent. of perfect bony unions among the thirty-one cases of Lane plate operations where the final results could be traced and 81 per cent. of all the Lane plate operations performed were known to heal by first intention.

The importance of the after-care in an open operation for fracture is only slightly less important than the operation itself. A case after operation should be just as carefully splinted as one not operated on. That this is necessary, however, does not prevent convalescence being often greatly shortened when operative treatment has been employed.

The postoperative treatment after applicaton of the Lane plate to the long pipe bones of the lower extremity is as follows: The patient is placed in a plaster cast and goes about on crutches at the expiration of one week, the sound member wearing a shoe, the sole of which is sufficiently thick, so that the injured cannot touch the ground.

1. The number of plates in which secondary removal was necessitated, forces me to the conclusion that smaller and lighter plates must be used if a tissue tolerance to them is to be cultivated. However, removal of a plate is a matter of comparatively slight significance when restoration of anatomic and functional perfection are considered. I have not had to remove wires, nails or pus where aseptic healing had been effected.

2. Nothing short of absolutely perfect approximation justifies an open operation for fracture. By this is meant a union so exact that no fracture line can be seen by spectators a few feet away from the field.

3. An ideal result is possible even when Lane's plates are used in the presence of pus, as shown by one case.

4. No doubt some surgeons have gone to both extremes in the consideration of this matter. However this may be, my results make me think we shall eventually see every skilled operator making routine use of it in carefully selected cases.

A DEMONSTRATION OF THE METHOD OF MANUFACTURING SERA AND VACCINES*

PRENTISS MCKENZIE
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I have been invited by your president to describe to you the production of diphtheria antitoxin and other biologic products, using the lantern to illustrate the same.

I propose to give you the process adopted for manufacturing the so-called concentrated antitoxin, which differs from the antitoxic serum first placed on the market in being a solution of the antitoxin-bearing globulin in normal salt solution, the other constituents of the serum being omitted, having been eliminated by the process.

As you know, diphtheria antitoxin is produced by immunizing horses against diphtheria toxin and using the serum from such horses for the production of diphtheria antitoxin. The diphtheria antitoxin in some unknown way is combined with pseudo-globulin which carries with it almost all the antitoxin. In the preparation of concentrated diphtheria antitoxin, the globulins are first precipitated from the antitoxic serum by the addition of saturated ammonium sulphate solution and separated by filtration from the serum-albumin and other inert substances. The pseudo-globulin (containing the antitoxin) is then separated from the euglobulin by means of saturated sodium chlorid solution in which the former dissolves. From this salt solution the pseudo-globulin (antitoxic globulin) is precipitated by acetic acid. The purified antitoxic globulin is then collected on a filter, dried between filter papers, placed in parchment dialyzers and dialyzed in running water to free it from inorganic matter.

When placed in the dialyzers, the antitoxic globulin is a white waxy mass, and is dissolved during the process of dialysis. The resultant clear fluid is passed through several layers of filter paper and then passed twice through Berkefeld filters. This fluid is standardized by the official process adopted by the United States Government.

Composition of Diphtheria Antitoxin.—The analysis of diphtheria antitoxin shows that its principal constituents are:

(a) Proteids.

1. Fibrinoglobulin formed from the fibrinogen during coagulation.
2. Euglobulin.
3. Pseudo-globulin, which carries with it almost all the antitoxin.
4. Serum-albumin.
5. Nucleo-proteids.

(b) Inorganic matter.

In addition to sodium chlorid, the serum contains minute quantities of phosphates and salts of calcium, potassium, and other metals.

* Read before the Chicago Medical Society, Dec. 6, 1911.

Advantages of Concentrated Diphtheria Antitoxin.—The advantages claimed for the concentrated diphtheria antitoxin in comparison with the antitoxic serum formerly employed as antitoxin are:

1. Concentration. By concentration, the bulk of the dose is greatly reduced, causing less pain when injected.

2. Purification. It is believed that by eliminating all the inert organic and inorganic matter and using only the antitoxin-bearing pseudo-globulin, the tendency to cause urticaria and other symptoms of so-called serum sickness is materially lessened.

THE UNITED STATES REGULATIONS FOR THE STANDARDIZATION OF DIPHTHERIA ANTITOXIN

The hygienic laboratory of the U. S. Public Health and Marine-Hospital Service issues at intervals small quantities of a test antitoxin. The number of standard units contained in each cubic centimeter of this antitoxin is definitely stated. This standard is used for gauging the strength of toxin which has been set aside for use in testing. The amount of this test toxin, which, when mixed with exactly one unit of standard antitoxin, will kill a guinea-pig of 250 grams' weight on the fourth day, is called the test dose. The test dose of this special toxin is measured into a special injecting syringe; the antitoxin is next measured into the syringe, the mixture is shaken and allowed to stand for at least fifteen minutes. Both toxin and antitoxin have been diluted so that the desired quantity of each is represented by 1 c.c. At the end of the period the 2 c.c. of the mixture is injected subcutaneously into the guinea-pig, then 2 c.c. of normal saline solution is put into the syringe to wash it out, and this is also injected without removing the needle. This method renders the test extremely accurate. In the calculation of the amount of antitoxin to be used for the test, the number of units per cubic centimeter is taken as a basis. For instance, suppose we wish to test a certain antitoxin for 400 units. This means each cubic centimeter contains 400 units, or in 1-400 of the c.c. there would be one unit.

This then is the amount of this antitoxin to be mixed with the test dose of toxin. Suppose the pig should live for four days after having received this mixture, another pig would receive 1-450 c.c. of the antitoxin; or, if the first pig had died on or before the fourth day, the second pig would receive 1-350 c.c. This scheme is carried out until the smallest quantity of antitoxin which will save the life of the guinea-pig for four days is determined. The number of times that fraction is contained in "one" will equal the unit value of that antitoxin per cubic centimeter.

Details of the Process for Preparing Antitoxin.—In propagating serum the first step is the selection of pure cultures of the diphtheria bacilli. The next step is the cultivation of the specific toxin from the organisms; this is obtained by inoculating large flasks of peptone bouillon and growing the same from five to seven days in a separate incubating room. After the growth is perfected, trikresol is added to kill the bacilli and the toxin is separated by filtration.

Before it is used on the horse the toxin is standardized by injecting graduated quantities into guinea-pigs of known body weight. In this way the minimum lethal dose is established, this being the smallest amount of toxin which will prove fatal to the guinea-pig within a definite time.

In beginning the injections the horse is given the minimum lethal dose for the guinea-pig, which is gradually increased every four or six days, for a period of six months. During this time the temperature and general health of the horse is carefully watched; furthermore, before any work is started on the animal it is carefully isolated and kept under the observation of a skilled veterinarian for the proper period of time.

Before the process of total immunity of the horse is discontinued a trial bleeding is made and the definite strength of its blood-serum determined.

The horse is used for the production of serum for the reason that it is comparatively free from disease, enjoys a high degree of natural immunity to diphtheria, and yields a fine quality of serum.

The horse must be robust and in perfect health. Each animal is first injected with mallein, which will reveal even the microscopic presence of glanders, and is kept constantly immunized against tetanus with tetanus antitoxin. The animals are kept in separate stalls, provided with individual water-supply, ventilation and drainage.

In bleeding the horse the same care is exercised that would be observed in surgical operations in any modern hospital. This is done in a separate building from the stables; the floor and walls are of cement and slate, and the room is thoroughly disinfected before the operation. Before the horse is brought to the operating room it is first led to an adjoining room, where it is prepared for the operation by thoroughly scrubbing the site of operation with an antiseptic, then covered with a sterile sheet which has been soaked in a bichlorid solution. The veterinary surgeon and his assistants, who draw the serum, wear clothing which has been sterilized. Everything connected with the operation, including the instruments, vessels and apparatus is thoroughly sterilized by the most modern methods.

A cannula attached to a sterilized rubber tube is introduced into the jugular vein of the horse, and the blood collected in a sterile parchment-covered jar. The blood is then transferred to the blood room, to allow the serum containing the antitoxin to separate from the clot.

After the serum separates it is transferred to a sterile bottle and a small quantity (0.4 of 1 per cent.) of trikresol is added to prevent the possibility of contamination after it leaves the laboratory. The addition of the antiseptic causes some cloudiness and in many sera this precipitation continues to a limited degree after filtration; this precipitation, however, does not decrease the antitoxic value of the serum.

ANTIPNEUMOCOCCIC SERUM

This serum is produced by the process of first injecting killed pneumococci of many different strains taken from a large number of persons suffering with pneumonia, and later live cultures of the pneumococci.

The same precautions are of course taken in the preparation of this as in the antitoxin for diphtheria.

ANTISTREPTOCOCCIC SERUM

Anti-streptococcic serum is prepared by immunizing horses against the streptococcus. A large number of strains are employed for that purpose, and the resulting serum is consequently polyvalent in character. When employed in suitable cases and in sufficiently large doses it is very effective. According to Dr. Barton C. Hirst of Philadelphia, who has had much experience in the use of this product, no less than 300 c.c. should be given during twenty-four hours (60 to 80 c.c. administered every four hours for twenty-four to thirty hours). In the treatment of malignant forms of erysipelas and in puerperal septicemia the results have in many instances been remarkable. It is believed by some that the effect of the treatment may be augmented by using strepto-bacterin at the same time. The injection of bacterin increases the amount of the antibodies in the patient's blood and increases the patient's resistance to the disease.

In its early history there was a difference of opinion regarding the protective part of antistreptococcic serum. This was mainly due to the fact that a polyvalent serum was not employed. Streptococcus is not a single but a generic name for a large and heterogeneous class the members of which are capable of producing the most varied forms of lesions.

The protective value of this serum has recently been strikingly confirmed by laboratory investigations carried on by Drs. George H. Weaver and Ruth Tunnicliff of the Memorial Institute for Infectious Diseases, Chicago. They found a marked difference in the protective value of different brands of antistreptococcic sera and these investigators demonstrated by experiments on 250 and 290 gram guinea-pigs that the H. K. Mulford Company's polyvalent serum afforded complete protection against one minimum lethal dose of the culture (streptococcus) in doses of 1, 2 and 6 c.c.

ANTIMENINGITIS SERUM

This serum is prepared in accordance with methods worked out by Dr. Flexner of the Rockefeller Institute after five years of exhaustive experimental work, and extensive clinical trial.

In the preparation of this serum the horses are immunized with injections of meningococci, alternated with injections of live cultures.

The injections are given alternately every few days, for a few weeks, the killed organisms are replaced by the living, the number of which is steadily increased. The injections are given as before, alternating with injections of autolysized cultures.

After this process has been carried on for six months, the serum of the horse is tested and if it shows bacteriotropic powers it is considered sufficiently strong to be of value for therapeutic purposes.

The finished serum contains agglutinins specific for the meningococcus and also co-agglutinins for pseudo-meningococci.

It contains specific amboceptors, which is shown by the test of deviation of complement. This is a very positive test, as even the most closely related organisms give negative results.

ANTITETANIC SERUM

This serum was first produced by Kitasato. The tetanus and diphtheria toxins are both soluble and the antitetanic serum is produced in very much the same way as antidiphtheritic serum.

An important consideration in its employment is its use early in suspected wounds, and in sufficiently large doses to neutralize the enormous amount of toxin elaborated by the tetanus germ.

The majority of cases require from 15,000 to 50,000 units of the serum, and the employment of it should be supplemented by open treatment, and any other measures which individual conditions warrant.

BACTERIAL THERAPY

This is fundamentally based on our knowledge of immunity. The subject of immunity is, however, too complex to permit us to go into it in any but the briefest way.

Metchnikoff's theory of phagocytosis is well known to you and he was the first to advance the idea that certain cells normally possess the power not only of ingesting but of digesting and destroying foreign particles and fragments of dead tissues.

There are three different orders of antibodies. The first order includes antitoxins, antivenins, antiferments, etc.

The second order includes precipitins and agglutinins.

The third order includes bacteriolysins, bactericidins, cytolysins, etc.

To these must be added the opsonins, which probably belong to the third order.

The kind of antibody depends on the antigen injected. An antigen or antigenous substance is one which is able to cause the formation of an antibody. For example, when a toxin is used as an antigen the corresponding antibody is an antitoxin.

Of these antibodies, Sir E. A. Wright regards the opsonins as the most important. The word "opsonin," from the Greek verb *opsono*, "I prepare food for," alludes to its power of preparing the disease-producing bacteria for ingestion and destruction by the phagocytes.

Of late, a new factor has come into this interesting subject. In studying the defenses of the body against infecting organisms, the tendency in the past has been to devote attention almost exclusively to the specific antibodies of the blood-serum and to the phagocytes. Only recently it has been suggested that certain definite chemical substances produced within the body take part in these defenses. For example, it has been shown by Noguchi that the activity of certain substances expressed or extracted from the leukocytes depends on fatty acids or their alkaline soaps. Lamar has shown that highly dilute solutions of the alkaline oleates produce certain changes in the pathogenic bacteria which

render them more subject to destruction. When soaped pneumococci are treated with the serum of a person suffering with pneumonia, they are rapidly dissolved. This action is inhibited or hindered by the protein of the serum. Lamar has found that by mixing soaps and boric acid with the serum, in suitable proportions, this inhibition by the protein is prevented. Furthermore, when animals are infected with pneumococci, and this is followed by an injection of a mixture of soap, boric acid and immune serum — namely, the serum of a person suffering with pneumonia, the infection can be prevented.

Sajous' Internal Secretions Theory. Wright concluded in 1904 the "protective substances which were evolved in the cure of disease and that were present in considerable quantities in the blood were to be regarded as produced by internal secretions." He added, however, that "he did not know where they were produced in the body." Sajous had one year earlier, in his work on the "Internal Secretions," claimed that the thyroid, adrenal and pancreas, were the source of internal secretions known as antitoxic, and that it was these secretions which endowed the blood of Metchnikoff's phagocytes with their immunizing power. He also claimed (1907) that Wright's opsonin was the thyroid secretion. The researches of Fassin in Belgium, and of Stepanoff and Marbe at the Pasteur Institute, favor Sajous' observations.

Sajous' theory is that bacterial vaccines excite the centers that govern the above glands, and by thus increasing the secretory activity of the latter, cause the appearance in the blood of the protective substances to which Wright refers.

All of this goes to indicate that, as already stated, there are chemical substances in the blood serum which take part in the immunity, in addition to the antibodies mentioned.

If living pneumococci were injected into the tissues of a person suffering with pneumonia, it would serve to increase the infection. While it is true that it would increase the formation of antibodies, yet at the same time, it would increase the amount of living disease germs in the body and make the patient worse.

Wright says that the principle underlying vaccine therapy consists of the exploitation of the healthy tissues in favor of the diseased tissues. For example, when a person is suffering with pneumonia, the tissue cells of the lungs may be in condition where they are no longer capable of responding to the stimulation of the pneumococci, and therefore are not able to produce antibodies. By injecting a dose of pneumo-bacterin, consisting of the killed pneumococci, in some other part of the body where the tissues are in healthy condition, the body cells respond to the stimulation and form antibodies which, carried in the circulation of the blood and lymph, are conveyed to the infected area, there to produce their action on the pathogenic bacteria causing the disease.

One of the best illustrations of the remarkable value of bacterial vaccines is the history of vaccination against typhoid fever as carried on in the armies of the world. Much attention was attracted by the remark-

able results obtained in the British Army during the Boer War. Of greater interest to us is the history of vaccination against typhoid fever in our own army during the recent mobilization of the troops of the Mexican border.

President Taft, in an address before the Philadelphia Medical Club, May 14, 1911, in referring to the health of the troops mobilized on the Mexican frontier, said:

> Two months after the mobilization, with the modern health regulations and by the use of vaccine against typhoid, not one case of typhoid fever has appeared in the entire force, except that of one teamster, who was not vaccinated. As I have this directly from the War Office I can assert it as one more instance for the marvelous efficiency of recent medical discoveries and practice.
>
> I need not recall the dreadful record from typhoid fever in the camps established during the Spanish-American War. The percentage of typhoid fever was so high that it is hard to believe; of 120,000 men there were 20,000 cases, with a case mortality of 7 per cent.

So successful has it proved to be that the vaccine is now administered to all recruits under 35 years of age (General Orders No. 76, War Department, Washington, June 9, 1911).

The question of mixed infections is exciting much interest at the present time. It has been found that in a large majority of cases more than one kind of pathogenic bacteria take part in producing the complex of symptoms. This phase of the subject is now undergoing investigation by experts in various parts of the world and bacterial therapy is being modified in accordance with the findings. This has resulted in the production of so-called mixed bacterins which include killed bacteria of various kinds to meet the requirements due to mixed infections. Thus we have Neisser-bacterin mixed, pneumo-bacterin mixed, typho-bacterin mixed, etc. To this list others will doubtless be added as the development of the knowledge enables the manufacturers to produce the proper mixtures.

Special studies are now being made by experts in the east to ascertain the nature of mixed infection in tubercular diseases, and probably a method will soon be developed for treating tubercle mixed infections with a mixed bacterin.

TUBERCULIN

Dr. Koch in 1890 announced the discovery of a substance in cultures of the tubercle bacillus, which caused a specific reaction in persons suffering from tuberculosis, and when administered over a sufficient length of time possessed a curative action on a tuberculous process.

This preparation was taken up enthusiastically by the medical profession, but at first there were no methods of regulating the dosage, and it was given without any reference whatever to the reaction produced and the results were disastrous. Subsequent study, however, as to tuberculin administration both for diagnostic and curative purposes has placed it on an entirely different basis.

Simply to refresh your memories on the subject I will briefly mention some of the different forms of tuberculin at present being utilized. The

first is Old Tuberculin. This tuberculin is called "Old" to distinguish it from the later preparations, and is prepared from the pure cultures of the tubercle bacillus, of five or six weeks' growth on 5 per cent. glycerin bouillon. The culture medium containing the germs is evaporated to one-tenth of its volume and filtered through porcelain to remove the germs. Old Tuberculin contains all of the soluble secretions of the tubercle bacillus in a 50 per cent. glycerin solution.

Bouillon Filtrate differs only from Old Tuberculin in that no heat is used in its preparation. New tuberculin T. R. was first produced by Dr. Koch. He decided the Old Tuberculin simply produced immunity to the toxin and not to the germ. For the production of this new tuberculin Dr. Koch used a virulent culture of the tubercle bacillus which he dries *in vacuo* and finely pulverizes in an agate mortar.

The pulverized triturated bacilli are ground and treated with a salt solution, centrifugated, and the supernatant, opalescent fluid discarded. The residue from this is dried, ground and treated with physiologic salt solution, centrifugated and the clear supernatant fluid collected and retained. This process is repeated until all of the residue is taken up. The clear centrifugates are united and preserved by treating them with glycerin 20 per cent. Each cubic centimeter of the T. R. is standardized to represent 10 mg. of the original dried tubercle bacilli.

In the preparation of Bacillen Emulsion, the finely pulverized virulent culture of the tubercle bacilli is used to one part of which are added 100 parts of distilled water and 100 parts of glycerin. The resulting suspension should contain 5 mg. of dried substance to each cubic centimeter.

DO AUTOGENOUS VACCINES MITIGATE THE DISTRESSING SYMPTOMS OF PULMONARY TUBERCULOSIS?*

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Pleurisy is recognized by most authorities as a frequent forerunner of pulmonary tuberculosis. We see patients with advanced pulmonary tuberculosis whose symptoms date from what appears to be their last attack of pleurisy. At the time they present themselves for medical assistance their complaint may be only a distressing cough, which is dry and unproductive, and which becomes more severe when they assume a recumbent position. Relief follows expectoration. Night sweats, repeated attempts at expectoration, loss of sleep and poor nutrition debilitates their physical condition and tends to interfere with recovery.

On admission to the hospital or to the dispensary such patients usually deny previous illness. When questioned further, they admit having had attacks of bronchitis or tonsillitis. The persistent troublesome cough,

* Read before the Chicago Medical Society, Dec. 6, 1911.

occasional blood-tinged sputum, loss of weight and night sweats drive them to seek medical advice, and on examination pulmonary tuberculosis in various stages is usually found.

Repeated careful examination of sputum in advanced and moderately advanced cases of pulmonary tuberculosis, before or after a hemorrhage, revealed the constant presence of pneumococci, streptococci, *Micrococcus tetragenus* and *M. catarrhalis*, in addition to tubercle bacilli. During a hemorrhage, pneumococci were sometimes the only organisms found.

Low opsonic indices to pneumococci, and streptococci in pleurisy and the constant presence of either of these organisms in pyopneumothorax suggested the application of autogenous vaccines in order to mitigate some of the symptoms of tuberculosis.

The cases selected were from the dispensary of the Illinois Post-Graduate Medical School, and from the Cook County Tuberculosis Hospital. They may be classed in the following groups:

1. Incipient pulmonary tuberculosis with night sweats, frequent unproductive coughing, positive von Pirquet reactions, and sputum in which tubercle bacilli could not be demonstrated.

2. Advanced pulmonary tuberculosis.

3. Cases with cavity formation in one or both lungs, accompanied by frequent hemorrhages.

Vaccines were made from the sputum in the following manner: The patients were instructed to wash their mouths with an antiseptic prior to expectoration. The first part of the sputum was rejected. The last part was washed with a sterile saline, and cultures on glucose agar, blood agar and blood serum were made. Pure cultures of the organisms named were obtained and vaccines made from them. The initial dose was about 50,000,000 of either pneumococci, streptococci, *M. tetragenus* or *M. catarrhalis*, or a mixed vaccine according to the organisms found in the sputum. The dose was doubled weekly until it consisted of 200,000,000. The object of using small doses was to study individual susceptibility.

The reactive symptoms after the injection of the vaccine were local hyperemia and tenderness at the place of injection, the symptoms being greatly relieved by the application of hot compresses. The latter also prevented the persistence of the hard indurated nodules which are common after bacterin injection. Not only was local pain persistent in places where the local lesions were in progress, but tenderness was elicited in areas of a former pleuritis.

In a few days the cough became productive, the mucopurulent expectoration was replaced by a serous-like material which was expectorated with ease. Respirations, which were labored and wheezy, grew easier, and gradually became normal. The patients were able to rest comfortably, night sweats ceased, appetite improved, and gain in weight was noticed. Cases with marked exhaustion showed no reactive symptoms until one or two days after the first injection, or only after the second or third injection.

In far-advanced cases with cavity formation, the distressing symptoms did not entirely cease, but some relief followed. The intervals

between the coughing spells were prolonged, and expectoration was easier. They were able to rest for longer periods without the use of narcotics, or the use of the various expectorants. With cessation of digestive disturbances the appetite greatly improved.

When bacteria and their products gain access to the body, protective substances are produced in the body which become antagonistic to the life and development of these organisms, and thus prevent general infection. These substances have been established by animal experiments, and are known as antitoxins, opsonins, etc.

Vaccines produce something in the blood to which the term opsonins has been applied. They assist the leukocytes in taking up and destroying that organism against which the person is opsonized. The opsonins are not only specific for a certain kind of organism, but also for various strains of the same organism. It is for this reason that there is a growing tendency to use not only stock vaccines, but stock vaccines of a polyvalent character (or different strains of the same organism), or the many varieties of the different bacteria. During the time of an infection, instead of giving a specific vaccine, a polyvalent one is given. Theoretically, new antibodies representing each strain of the bacterin ought to be produced. But the cells in a patient's body that manufacture the above substances are already taxed to the limit to produce specific antibodies to antagonize living bacteria or their products. Instead of obtaining results from the vaccines no improvement is noticed. This may perhaps explain why so many have lost faith in vaccine therapy. With the above in view the following were tried:

Cases where autogenous vaccines produced marked reaction with ultimate disappearance of distressing symptoms, little or no reaction resulted when the same vaccine was used on other patients.

Strains of pneumococci or streptococci were obtained from patients during a severe attack of pleurisy or bronchitis. Strains of the same bacteria were also obtained from cases in which there were no distressing symptoms. Differences in the reaction were noted in the cases of these different strains, autogenous vaccines giving marked reaction with the disappearance of the distressing symptoms, while the same organisms used on other patients as stock had little effect. It is also to be noted that in the acute infections autogenous vaccines gave marked reaction, while in those in which distressing symptoms were absent, no reactive symptoms could be noticed with autogenous vaccine.

It can be readily seen that in the presence of mixed infection Nature's attention is withdrawn from the healing or encapsulating process of the tuberculosis invasion. When one lung is tuberculous, and the other becomes pneumonic, the chances for recovery are nil.

Might we not modify the aphorism of Niemeyer, that "the greatest evil that can happen to a consumptive is that he should become tuberculous," and say instead "the greatest danger that can happen to a tuberculous patient is that he should contract pleurisy or pneumonia"? By immunizing patients against the organisms obtained from their

sputum, we may hope to prevent the tuberculous lung from becoming pneumonic, relieve the distressing symptoms which cause exhaustion, aid Nature in the healing process and thus favor recovery.

Fifty cases were studied: twenty incipient, twenty-two advanced and eight far advanced cases. The following histories will illustrate some of the cases of each group:

1. J. O., white male, aged 25 years. Five years ago he had pleurisy that made him subject to frequent attacks of pain in the chest. He suffered from a similar attack ten months ago from which he never recovered. The coughing spells were so frequent and unproductive that he could seldom have a night's rest. In attempting to expectorate he frequently vomited, which produced digestive disturbances. His night sweats were exhausting. The sputum from which the vaccines were made contained many tubercle bacilli in each microscopic field and pneumococci from which the bacterins were made. No reaction was manifested until the third injection was given, when the cough gradually became productive and the sputum, which was at first tenacious and mucopurulent, became serous. The intervals of coughing were not only longer but he was able to expectorate easier larger quantities which decreased later. This enabled him to rest for a longer period.

The cessation of the exhaustive night sweats and the longer periods of rest enabled him to sleep. His appetite not only improved but his weight, which was 105 pounds before the vaccines were given, was 128 pounds after the tenth dose. A decrease in the number of tubercle bacilli was noticed in each microscopic field.

2. Mrs. Z. W., aged 45 years. Twelve years ago she contracted a right-sided pneumonia and two years later she had a similar attack. Last year she had pleurisy of both apices, after which she suffered constantly from bronchitis and asthma. The frequent unproductive cough greatly exhausted her, night sweats were marked and the gastro-intestinal tract was disturbed.

Pneumococcus and micrococcus catarrhalis were the only organisms present in the sputum. After the first dose of the vaccine the reactive symptoms were marked. The cough gradually became productive and it was easier to expectorate. When six injections were given the cough and expectoration not only stopped but the respiratory efforts which at first were difficult and brought on frefrequent paroxysms of dyspnea, gradually became normal. The night sweats stopped, the appetite improved and she gained eight pounds in six weeks.

3. F. Y., white female, aged 19 years. Three years ago she had a left-sided pleurisy from which she suffered an entire summer. She never fully recovered after that. Three months ago she suffered from a severe attack of coughing which was unproductive, and in attempting to expectorate she frequently vomited. Frequent spells of coughing with exhaustive night sweats caused her to be awake nights. No tubercle bacilli could be demonstrated in the sputum after many attempts with various methods. The only constant organisms present were pneumococcus and micrococcus catarrhalis, from which the vaccines were made.

When three injections of the vaccines were given she began to expectorate easier, night sweats decreased and sleep was less disturbed. At this time occasional tubercle bacilli were noticed in the sputum. These were seen in greater numbers as the bacterins were repeated. After the tenth injection the coughing spells were only occasional but the night sweats stopped and she was able to sleep the entire night without being disturbed by coughing. Her appetite is excellent and her weight is gradually increasing.

4. B. T., white male, aged 32 years. Patient states that, except colds and coughing, he was not seriously ill until two years ago, when he had a pulmonary hemorrhage. He admitted, however, being occasionally subject prior to the hemorrhage, to colds, coughing spells and night sweats. When seen last August he suffered from another severe pulmonary hemorrhage which did not respond

THIS TABLE ILLUSTRATES SOME OF THE CASES STUDIED

	Name	Sex	Age	Time	Night Sweats	Cough	Appetite	Pain	Sleep	Previous Illness
Incipient cases.	L. P...	F.	24	B A	Marked Stopped	All the time and unproductive. Stopped.	Poor. Good.	Right chest. None.	Disturbed. Well.	Pleurisy two years ago.
	M. W...	M.	35	B A	+ Constant night and day Stopped	Frequent and unproductive. None.	Poor. Improved.	Chest. None.	Disturbed. Well.	Pleurisy 14 years ago.
	Mrs. S.	F.	30	B A	Occasional None	Unproductive and asthmatic. Relieved.	Poor. Good.	Right chest. None.	Insomnia. Well.	Pneumonia 13 years ago and asthma six weeks ago.
	E. B...	M.	19	B A	Marked Stopped	Constantly. Only at night and morning.	Poor. Good.	Both apices. Stopped.	Restless at night. Well.	Typhoid-pneumonia two years ago.
	H. W..	M.	29	B A	Exhausting Stopped	Always. Occasionlly.	Poor. Good.	Right apex. Stopped.	Restless. Good.	Pleurisy 6 months ago.
Moderately advanced cases..	J. W...	M.	30	B A	Marked Less frequent	Constantly. Occasional.	Poor. Very good.	Right chest. Stopped.	Poor. Well.	Pleurisy a year ago
	A. D...	..	24	B A	Exhausting Stopped	All the time. Night and morning.	Poor. Good.	Left Chest. Stopped.	Disturbed. Good.	Pleurisy two years ago.
	M. F...	M.	43	B A	Marked Stopped	Constantly. Less frequent.	Poor. Voracious.	Right chest. Stopped.	Disturbed. Good.	Pleurisy last March.
Far advanced..	E. L...	..	49	B A	Frequent Occasional	Constant and difficult. Easier and less frequent.	Poor. Very good.	Chest. Occasional.	Disturbed. Improved.	Frequent colds for years.
	M. F...	..	20	B A	Exhausting Less frequent	Troublesome and frequent. Easier and productive.	Very poor. Improved.	Left chest (cavity). Not marked.	Restless. Well when not coughing.	Pneumonia 5 years ago.

A = after vaccination. B = before vaccination; +, whenever patient went to sleep.

to treatment. The sputum, which contained tubercle bacilli, was also full of pneumococci from which the vaccines were made. Owing to his critical condition the vaccines were withheld for awhile, but as his condition did not improve it was decided to give a small dose. Ten million bacteria were given, hypodermically. No reaction was noticed.

The following week, Aug. 19, 1911, the vaccines were repeated. There was marked pain in both apices and in the axillary region. The expectoration became profuse and easier, and the hemorrhage seemed to decrease. Aug. 26, after the injection patient feels much improved, hemorrhage stopped and night sweats were not so exhausting. He was able to sit up in bed. Sept. 2, patient is able to walk, enjoys a good appetite, and the little he expectorates is without discomfort. Sept. 9, patient coughs only for a short time when going to bed, which stops after he freely expectorates. The night sweats entirely stopped, and he is able to sleep undisturbed the entire night. After ten injections were given, the patient's condition is good and he gained fourteen pounds.

A. HISTOLOGIC PATHOLOGY OF TONSILS REQUIRING REMOVAL *

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In many instances the microscopic examination of the tonsils removed is necessary to demonstrate the important pathologic changes that require the extensive radical operation of tonsillectomy. For instance, you may have large tonsils in one case, and these cause very few symptoms, either local or general, while the second case of identical appearing tonsil on gross examination will produce marked local, regional and general symptoms of infection; the histologic examination will clearly demonstrate the reason why. The same is true of the so-called submerged, small, degenerated tonsils. In one case it is inoffensive; in another it produces general or local septic processes; in the third there are foci of tuberculosis. The microscopic demonstration of the reasons for certain individual findings as, for instance, the marked distention of the upper crypt, or for that matter most of the tonsillar crypts with their cheesy masses, and, furthermore, their infection and degeneration of the epithelium all the way to the capsule, demonstrate the necessity of complete removal. In tonsils in which peritonsillar abscess had existed, one can many times demonstrate the usual place where this perforation occurred. In most instances it is through the anterior portion of the large upper crypt (sinus supratonsillaris of Killian). As to the rarer conditions of the tonsil, as early formation of stones in tonsil, hyperkeratosis, chondromatous formation in the tonsil, the various other non-malignant as well as malignant neoplasms of the tonsils can with positiveness be demonstrated by the microscope and much additional valuable and interesting information will be added to the case in question if this work is done more frequently by the laryngologist than it is. I will now demonstrate

* Demonstrated before the West Side Branch of the Chicago Medical Society, Dec. 15, 1911.

slides of most of the conditions just mentioned, but time will not permit me to go into detail, as, for instance, in giving detailed histories of the cases from whose tonsils these sections were made. These are of inestimable value when discussing the histologic-pathologic diagnosis.

(Demonstrated lantern slides of the above subjects.)

B. DEMONSTRATION OF THE VARIOUS METHODS OF TONSILLECTOMY, ESPECIALLY THE SLUDER METHOD AND AUTHOR'S MODIFICATION OF THE SAME

CASE 1.—Man, aged 27 years. Chronic hypertrophic tonsils (cryptic degeneration). Several attacks of acute articular rheumatism preceded by acute follicular tonsillitis.

Operation.—Dissection Method: Under general anesthesia (ether). Grasp tonsil with Andrews' vulsellum forceps. Supratonsillar incision with author's knife on to the capsule. Boetcher's scissors introduced into this opening. The blades of scissors are opened and cavity enlarged; anterior and posterior attachment of the tonsil to the pillars separated by scissors and the further dissection done by the finger, which is covered by a piece of gauze. The operator wears rubber gloves, not only on account of cleanliness, but in public institutions one has not always ruled out the possibility of syphilis in these patients, and there

Fig. 1.—The tonsillectome.

is less likelihood of self-infection by the use of the gloves. The gauze is employed on account of the facility of shelling out the tonsil. It is also necessary because the gloves are too slippery to do a finger dissection with. The Pierce-Müller snare is now passed over and around the entire tonsil, which is well pulled inwards and wire drawn down on to the fibrous pedicle at the base of the tonsil. The snare is now locked and by a slow turning of the screw the tonsil is ecrased. Free bleeding follows and this is checked first by compression (author's clamp forceps). Patient is reanesthetized. The second tonsil is removed in the same way. The clamp is now removed from the one and put on the other side. Inspecting the cavity for a few moments for bleeding. If any occurs, it is controlled by artery clamps (Murphy). There are four principal points that bleed after tonsillectomy and artery forceps applied in these locations, without any definite vessel being grasped, will control the bleeding. These points are: 1 supratonsillar between the anterior and posterior pillars, from the palatine branch of the spheno-palatine (usually the vein and especially in children); 2 base of the tonsillar fossa (plexus of veins); 3 in about the middle portion of the fossa nearer the posterior pillar; from the tonsillar vessels. 4. Very low down and posteriorly. This bleeding occurs very rarely and is from the palatine branch of the ascending pharyngeal. There are occasionally other smaller bleeders from the anterior pillars which require the turning back of this structure in order to grasp them. This case has no adenoids.

CASE 2.—*Sluder's Original Method.*—Boy, aged 8 years. Referred from school inspectors on account of the usual complaints from tonsil and adenoid disease.

Examination: The usual picture of such cases. Tonsils quite large. Operation: General anesthesia, ether. (Atropin, 1/150 of a grain is administered about half an hour before operation in all cases.) By means of the Sluder (original) instrument, the tonsil is lifted out of its bed and brought on to the inferior maxilla, then brought over the alveolar eminence, which is used as a fulcrum, and by the additional use of the finger the tonsil is worked through the fenestrum of the instrument. The blade is now driven home, but great care is taken not to take the finger off before the blade has been driven home, else the tonsil may slip back and only a part of it is removed, or it will at least be buttonholed. After the tonsil is severed from all its attachments, it is found to be hanging to the instrument by a few fibers, not requiring any extra grasping instrument. One notes the free bleeding after this operation, but I believe in most cases it is more apparent than real. When one remembers that we put the vessels all on a stretch, and not until the blade cuts through all the tissues does any bleeding occur, then one can also explain this sudden gush of blood. This in the majority of instances soon ceases, but one may control it by compression of a large hard gauze sponge. (I employ the clamp, Fig. 3, which I have been employing for

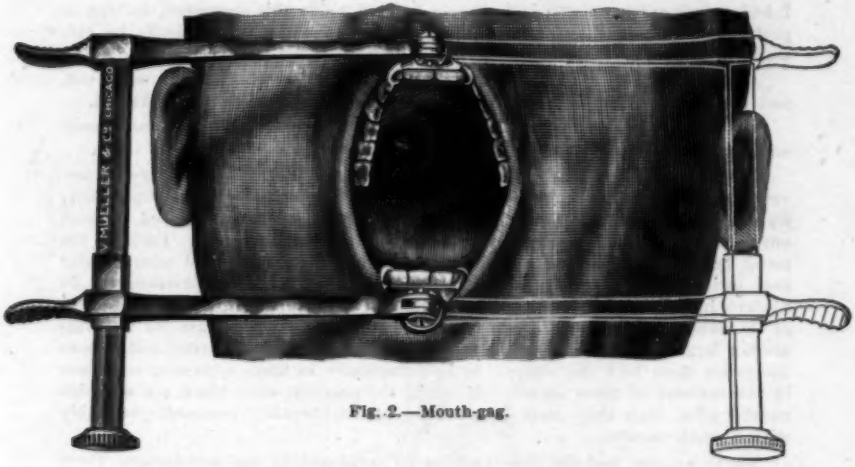

Fig. 2.—Mouth-gag.

this purpose in the finger dissection operation for the past two years.) The same operation is now done on the other tonsil and then the adenoids are removed. It is usually necessary to reanesthetize before removing the adenoids, so that one may have complete relaxation of the soft palate. After palpating to determine the size, locations and consistence of the adenoids, as well as the general configuration of the naso-pharynx, with especial reference to the osteum tubæ cartilaginæ, I decide on the instrument that I desire to employ. In this case, being large, not very firm masses, with a very roomy nasopharynx, I will use the Brandegee forceps, taking great care not to get hold of the septum. Twisting the mass off from its attachment, it must not be pulled out, because often this procedure will strip some mucous membrane from the posterior wall of the pharynx. With a curved scissors (Boetcher's), while holding the twisted off mass in the adenoid forceps, it may be cut off clean. If there are adenoid masses laterally behind the posterior lip of the Eustachian tube, as they are in this case, then they are curetted by means of a small Stubbs' curette. The free bleeding that results from this procedure can be controlled in a measure by placing a hard round gauze sponge mounted on an artery forceps behind the soft palate. This latter is drawn forward by the small adenoid curette or pillar

retractor. Firm pressure for a few moments stops the active flow, which, as a rule, stops by itself, only not so much blood is lost by this little maneuver, here demonstrated.

When Sluder's first article appeared on this operation, I began to use it in this hospital and found that in a goodly number of cases I failed, even after I had had good practice in the manipulation of the instrument, and my assistants, who must necessarily do most of this work in this institution, could not do it at all. I, therefore, began to analyze the difficulties and the main one was the attempt to adhere too strictly to the technic as to the landmark of the alveolar eminence. We then began to ignore this landmark, and simply lifted up the tonsil by means of the Sluder instrument until it appeared like a small tumor behind the anterior pillar and while holding the instrument in this position we pushed the tonsil through the ring. It suddenly gave away, showing on the mesial side like a cauliflower growth. Holding the finger steady over the opening on top of the anterior pillar, the blade was pushed down over the capsule of the tonsil, which was now folded upon itself. Now the tonsil was severed from all its attachments and found completely removed in practically every instance. Many a time I removed stumps of tonsils previously operated on, and often when I had a new assistant who had not yet learned to do this operation, leaving in portions of the tonsil, I removed these remains of the gland perfectly by this method.

About that time Ballenger's modification of Sluder's instrument came out, and I at once adopted it, because it made it much easier to do the operation.

We will now demonstrate Sluder's method by means of Ballenger's instrument and my modification of the technic.

CASE 3.—*Modified Sluder Operation.*—Boy, 8 years old. Same history as previous case. Examination: Small tonsils. General anesthesia, ether. Operation: By means of Ballenger's instrument the tonsil is lifted out, as mentioned, without any regard for the alveolar eminence, as landmark or fulcrum. Pushing the tonsil through and driving the blade home, the tonsil is removed with greater ease, owing to the power one may exert without effort with this instrument. In Sluder's instrument it is mostly with the thumb; with Ballenger's it is the strength of the hand that forces the blade through the tissues. In this case the adenoids are not large, so I will employ the middle size Stubbs' adenoid curette and remove the entire mass with one sweep. It is unnecessary to make a number of passes in the removal of these masses. If, as in the previous case, there are adenoids on the sides, then they must be carefully and deliberately removed, preferably with a small curette.

While we now had the tonsil operation developed to our satisfaction, there still remained this gushing of blood from this sudden cut, and to this point I have further modified this procedure by devising an instrument that would sever the tonsil slowly and by a dull method, namely, the snare. This instrument, which I designate a "tonsillectome" (Fig. 1) is the Pierce-Müller snare so modified as to have a small but heavy ring and cannula instead of the simple light cannula. This ring has an inner groove which serves the purpose of hiding the wire loop. The wire loop is twisted in the form of a stylet, which passes through the heavy cannula and is fastened into the lock of the snare like any other stylet. The snare is otherwise the same as the original and operated the same. The technic of the operation is the same as in Case 3, only instead of driving the blade down we draw the wire forward, which is more certain and will remove none of the mucous membrane of the pillars.

I will now demonstrate this method, employing nitrous oxid-oxygen and ether combination anesthesia. Anesthetist, Dr. Ream.

In regard to this method of anesthesia, I wish to state that for more than two years I have employed nitrous oxid-oxygen continuous anesthesia for all sorts of conditions and in a good many cases of tonsillectomy and adenoids removal. These were principally in private practice and in selected cases. Dr. Ream usually

gives the anesthetic. It has been uniformly satisfactory, only it is still too costly for general use.

CASE 4.—*Sluder's Operation with Tonsillectome:* Girl, 5 years old. Similar history to last two cases. Examination: Fairly large tonsil. Operation: The tonsillectome is passed across the tongue, the tonsil lifted out by the instrument, pushed through the ring, and the wire drawn down while the finger guards the opening to prevent the tonsil slipping back. The snare is now locked and it cannot slip back any more. A vulsellum forceps grasps the tonsil so that when it is ecrased it will not drop into the throat or be swallowed. (The latter happened in one case.) The screw of the tonsillectome is now turned slowly and the ecrasing of the fibrous portion of the base of the tonsil performed. One observes that there is much less bleeding by this method. The reason for that is that after the tonsil is pushed through and fastened by the snare, the tissues are allowed to drop back into their natural position. Then one takes more time in cutting off the attachments, and, lastly, the severance is accomplished by a dull method. I do not wish to imply that there is no bleeding, but never as much as by the sharp

Fig. 3.—Tonsil-clamping hemostat.

methods. The same loop is employed for the second tonsil; in fact, may be used a number of times by simply unlocking the snare and pushing the collapsed loop into the slit of the ring and forcing it to open up, when the snare is again locked and ready for the next tonsil.

We now remove the second tonsil in the same manner, passing the instrument from the opposite side. The adenoids are removed in the same manner as in the preceding case.

In conclusion, I wish to say that in adults, in the cases where one has to deal with marked adhesive changes, as after abscess, etc., in these very small flat tonsils I find it is better to dissect them either under local or general anesthesia.

I have done a number of tonsillectomies by the Sluder method, and its modifications, under local anesthesia, but would advise against it on the principle that in order to do a complete operation one must bring the tonsil forward, must have the muscles relaxed, and that, no matter how well anesthetized locally, the patient will instinctively control these muscles and make the technic difficult and the operation painful.

The mouth-gag (Fig. 2) is one I have devised to overcome the objections I have found with most of the mouth-gags.

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FROM THE VIEWPOINT OF THE INTERNIST

J. F. Hultgen: This subject has been given so much discussion of late that there is little to be added. On the one hand we are taught by immunologists that it is a good thing to have an infection localized because it will then produce its own antibodies and the patient will recover. From the pathologic reports of Dr. D. S. Davis, from personal and other experiences, I judge that there is no distinct relation between the anatomy of the tonsil and the clinical findings.

The relation of the tonsil to the lymphatic system or to the thymus gland is not well known. Just what and where the importance of the tonsil comes in is difficult to state. The bacteriologists have accomplished little in this field of investigation, beyond the demonstration of an exceedingly variegated saprophytic flora of the mouth and throat.

I have long held that the function of surgery is to correct mechanical deformities, whether congenital or acquired. I mean that the legitimate realm of surgery (whether of the abdomen or of the throat) is to do away with obstructions totally or partially. In abdominal surgery, this consists principally in the institution of proper drainage or the correction of congenital defects. In tonsil surgery the indications for complete enucleation have not as yet been securely placed. Judicious choice in the therapy of hypertrophied or infected tonsils is often a matter of difficulty. For the internist it would seem to me, a wise conservatism would be the normal attitude. To counsel enucleation of every tonsil that projects beyond its two pillars without interference of breathing, phonation, or hearing would, of course, be wrong. No routine disposal of cases but individualization. Some questions in medicine are proper subjects for discussion before medical meetings, but not for the teaching of undergraduates, at least not for dogmatic teaching. The history of medical advances from Ephraim McDowell, Marion Sims, and Lawson Tait down to the present day gives ample proofs of the pernicious influence of dogma. Such a condition is likely to follow the case of abnormal, or apparently abnormal tonsils. I do not believe an operation should be done without having the spleen investigated, the condition of the lymphatics well looked into and a hemanalysis made.

Just how early children should be operated upon, or just how early the influence of diseased tonsils enters into other morbid conditions is a matter for individual and sober judgment. There should be no tonsillectomy without preliminary thorough examinations of the patient. Mention was made of a case where the patient had syphilis and had infected someone else. Such cases are not at all rare. Mercurial treatment here would have rendered tonsillectomy superfluous. I have now a case of Mikulicz disease. The entire pharyngeal ring of lymphoid tissue is involved in addition to hypertrophy of the salivary glands, but I have not settled yet whether or not to operate. Such cases are on the borderland of primary blood diseases. Ulcero-membranous tonsillitis, or Vincent's angina is not so very rare. It is usually unilateral. One distinguishing thing about this symbiosis, or Vincent's angina, is that it produces regular buboes, resembling syphilis; I suppose because it is caused by spirochætæ.

I think the unqualified statement of Dr. Billings that the removal of tonsils is indicated in conditions growing out of focal infection should be taken with a grain of hesitation. We all are convinced of his earnestness, but at the same

time I think that biochemistry of vaccines is so little known, the mechanism of their action as yet so darksome, and the relations between chronic focal infections and various morbid conditions so loose, that we had better act with circumspection. Nature has provided us with an elaborate defensive system and I think the tonsil is meant as a defensive and eliminative organ. As such it behooves us to go slow in preaching removal of all abnormal tonsils some of which may heal under medical therapy.

I believe the Health Department is a little too active in that respect and does not leave the diagnosis enough to the family physician. Very often chronic tonsillar hypertrophy, like the status lymphaticus, or the exudative lymphatic diathesis, or scrofulosis, is hereditary. In such cases preliminary constitutional treatment must be thought of and will often be found to successfully remove interference with breathing, articulating or general health. Nevertheless the words of Drs. Billings, Beck, Corwin and others should be to us what the whispering oak trees were to the meditative Teutons: a presentiment of dawning truth.

FROM THE SURGICAL STANDPOINT

Dr. George C. Amerson: The ground has been so well covered by my predecessors this evening that little remains to be said except the consideration of the tonsil as a factor in the production of surgical diseases. Infections resulting from the tonsil may be divided into two classes; those resulting from direct contiguity and those transported by means of the blood stream or the lymphatics. We are all aware of the possibility of the tonsil being the primary focus of infection with extension into the glandular elements, also into the loose cellular tissue and spaces of the neck with resulting cellulitis or abscess.

The cases of so-called idiopathic or unknown origin no doubt in many instances have their primary lesion in the tonsil. Cases of osteomyelitis, peritonitis, pleuritis and arthritis and many others have been proven to have their origin in a tonsillar infection.

Recent investigations along the line of the tonsils as a primary source of infection have led us to believe that a great percentage of these cases of unknown origin can be traced primarily to the tonsil and the removal of all pathologic tonsils is going to be a great factor in eliminating this class of cases. Direct association of acute tonsillitis has been recorded in exophthalmic goiter. So there is no question but that the early removal of infected tonsils, thereby preventing the absorption and transportation of septic materials by means of the blood stream and lymphatics to other areas is a move in the right direction and will prevent many complicating surgical conditions.

FROM THE STANDPOINT OF THE ANESTHETIST

Dr. F. K. Ream: I am sorry I was unable to get here sooner so as to be able to administer the anesthetic in all of these cases, but from those that did get it you will see something of its effect.

It is not only possible for us to use oxygen in general work and heavy surgery, but in tonsil work as well. By all means the anesthesia for nose and throat is the most difficult to administer. Out of a number of hundreds of such cases I have yet to have an unfavorable result.

The apparatus gives you oxygen, nitrous oxid, and a bit of ether that may be picked up if it seems necessary and a little heating device.

FROM THE STANDPOINT OF THE LARYNGOLOGIST

Dr. Edwin Pynchon: I have been much interested in this clinic and in the paper. The tonsil question, in my opinion, is one of great importance to laryngologists. I want to go further. For the general practitioner the tonsil question, if correctly understood and fully appreciated, is one of the most important that can be considered.

In the removal of tonsils, or in their consideration we find two distinct characters of tonsils. First we find those that are detrimental mechanically. The

commonly thought-of feature of the enlarged tonsil is that it is an impediment to breathing. In some ways and in some cases that is so, but not in all. In any case wherein it is an impediment it should, of course, be removed because if breathing is not properly done the blood is under-oxygenated.

There is more to the structural formation of the tonsils than simply their interference with respiration. In the first place they may interfere with the normal mobility of the pillars and the closure of the soft palate against the pharynx, so that from a mechanical standpoint, if nothing more, they are thus a source of annoyance.

Every time the patient swallows the tonsil is "bunted" up against the Eustachian tubes. You may say, that cannot be; that these two structures are too far apart. That may be, but the effect is nevertheless transmitted by operation upon the intervening tissues and thus tending to produce ear troubles.

The next consideration is that wherein the tonsil is a detriment on account of being diseased. A large number of throats examined have tonsils in such condition. You might examine two throats and could not tell, from the appearance of the tonsil, which one causes rheumatism and which one does not. If you are wise you will remove them in both cases. I have removed over 3,000 tonsils and I have never failed to get benefit in some direction.

Diseased tonsils in different patients produce entirely different effects. One has catarrh; another has recurrent tonsillitis; another has ear trouble; another (if he happens to be a singer) will have recurrent laryngitis which seriously handicaps him, while another has gastro-intestinal catarrh. It is common to have patients come in with gastro-intestinal troubles who have bad tonsils. I have had patients come to me complaining of gastro-intestinal catarrh (they don't call it that, to be sure, but that is what it is) who don't have any appetite, have indigestion, are constipated, and seem to lack their normal gusto for food, as was very ably described by one patient, a Catholic priest. All of these cases are improved by removal of the tonsils.

I might mention one case upon which I operated. The patient, four days less than a year old, was the daughter of a doctor. She was not a mouth-breather and did not have any of the ordinary symptoms, such as sore throat, or any of the symptoms that a child would ordinarily show with tonsils that were quite enlarged. It had, though, what I might term "chronic insufficiency of digestion." It had to be given predigested foods. I removed the tonsils radically, and took no other medical steps. In a few days she seemed apparently well, could eat and digest well and is now a healthy, ruddy child of four.

A great deal has been said against removing the tonsils "because God put them there." What about the foreskin? Didn't God put that there? And yet from the time of Moses down we hear of His commands to remove it. There must have been some mistakes in creation.

We sometimes hear the doctor say: don't touch the tonsil, it will atrophy after a while. It does atrophy but by a slow process of suppuration, getting smaller and smaller. How long does that take? I operated upon one patient 76 years old, and another 72, with marked benefit, and have operated on no end at 50 and over. So it would seem that Nature is not so very active, and that her modus operandi of getting rid of tonsils is not so very satisfactory.

Then there is another statement that the tonsil is a part of the lymphatic system, and if it is removed the economy will suffer. The bulk of the tonsils and adenoids is small in comparison to this entire system. If you take out a kidney, or lose a lung, the patient will live in comparative comfort, so I guess no one will suffer so very much from removal of a little bit of the lymphatic system.

It is said, also, that the tonsils are the open-end of the lymphatic system. If this lymphatic sytem has open ends, why don't it have them elsewhere? There must be some reason for it.

Now this is not original, but I am disposed to endorse it: During fetal life the intestinal tract does not act. During fetal life the kidneys do not act. During fetal life the skin does not act, and the lungs are also not in use. Consequently, during fetal life we have no one of the usual methods of elimination.

Yet in the growth of the child metabolism is taking place all the time and there must be some method of taking care of the residues. Now, it has been suggested by Auten that the tonsils perform this function by discharge into the amniotic fluid, and if this is the case then, having performed their function, there is no particular need for them after birth. I rather think that this is the most rational explanation that has yet been offered for their existence. It would seem that this is so for, having performed their function Nature promptly provides for their being atrophied, and if there is not something to cause their becoming hypertrophied they do diminish in size. So I can see no reason for holding the tonsil so holy that we cannot remove it.

We cannot understand why one patient has rheumatism and another has not. Let me tell you why a patient with bad tonsils has rheumatism: we know such tonsils secrete pus, and we know that pus contains bacteria and so from this premise we know that the discharge from the tonsil may produce rheumatism. We know it clinically because when a patient with rheumatism from this cause has his tonsils removed he has no more rheumatism. But that don't explain why another patient with bad tonsils don't have it; or why he may have it, have the tonsils removed, and does not get well of rheumatism. Certain points in the body are weak. Certain points have a tendency to suppuration. I will enumerate some. The most important is the tonsils, and after them comes pyorrhea alveolaris. These two points produce suppuration more frequently than any others. While, to be sure, there is not much from each tooth there are a good many teeth. The next point, in my estimation, is the chronically suppurative appendix. The surgeon sees such a patient and says he is all right. He is not, for that pus goes on and on poisoning his system. Why is it you read that the great Judge So-and-So was taken suddenly ill, hurried off to the hospital for operation and there they found the appendix completely rotten. That appendix was rotten for months and would have been unrecognized for many months more except that something precipitated the acute attack. There are other points in the body where suppurative processes go on which do not for years produce acute manifestations, but may at any time produce rheumatism, Bright's disease, or other trouble.

The nasal sinuses are often in a diseased condition without the patient knowing it. First there is a catarrhal sinuitis. The difference between the catarrhal condition and a succeeding suppurative sinuitis is only one of degree and in the germ that happens to effect it.

Many a general practitioner looks into a throat and says "those tonsils are all right" when I would say, "no." Why this difference? In the first place it is the picture of the mucous membrane which I see in the throat, and the appearance of the saliva. There is a frothy, unnatural saliva, and a pronounced degree of redness in the arch of the pillars. It is common to find a clear line of redness; pink on one side and red on the other, that goes up on each anterior pillar from the tongue to the uvula and thus causing an "arch of redness." That is a peculiarity of the diseased tonsil. I do not know of a case presenting such appearance that would not be benefited by removal of the tonsils. If you had a patient come in with red eyes, you would at once inquire into the cause of the trouble. You would not think of telling him there is nothing the matter with his eyes. The color of the mucous membrane presents just as fruitful a field for diagnosis, and when abnormally red always indicates trouble.

When a tonsil starts out diseased there is a certain amount of disease all the way along until it is removed.

Dr. Jos. C. Beck (closing the discussion): The first speaker, in his remarks on conservatism, appealed to me very strongly. I operate on a great many patients here at the hospital. Quite a number leave the hospital without operation. Many I consider too young. That touches upon a point to lay particular stress upon. Early in the life of the child the tonsil does have a function. I don't know so very much about the intrauterine life, but it has a function in the first year and year and a half. I rarely remove the tonsils and adenoids in a

child under two years unless it cannot swallow and breathe while nursing. In that case I only remove as much as seems necessary to give comparative comfort. In ten cases I have seen some very serious results and two deaths from conditions quite analogous to removal of the thymus in dogs, from too early removal of adenoids or tonsils. Sajous, in his work on the ductless glands, also mentions this point and I believe along this line of investigation something of importance will be worked out.

The pendulum always swings to the opposite extremes. We are possibly doing more operations than there is need for, but we are constantly finding out things that will, undoubtedly, lead to better and more exact diagnosis and indications for the radical removal of tonsils.

So far as the Health Department is concerned I think its work is very good. An appreciation of the importance of these conditions must be driven home to the mind of the general public.

The man who does a tonsillectomy in the office is taking a chance, especially under a general anesthetic. With gas, or such an anesthetic as this, there is not so much danger. Operation may be done in adults and the hemorrhage controlled without need of a tonsil or hemostat or by artery forceps, especially under local anesthesia. It is our practice to see that all hemorrhage has stopped before the patient is put to bed. They do not leave the operating-room until it does.

We shall be only too glad to have any of you gentlemen come here any Tuesday or Saturday and I will demonstrate to him this proposition wherein the hemorrhage is not so marked. I showed the method to-day and have seen a sufficient number of cases at, and after operation, so that I am satisfied that the method I am advocating is good in principle.

A STUDY CONCERNING THE NATURE OF THE WASSERMANN REACTION *

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In order to be able to grasp the principle of the Wassermann reaction, it is indispensable to be acquainted with the laws of immunity. These laws, as laid down by the medical investigator, fully agree with the teaching of the investigator in natural sciences. This branch of modern medicine frankly admits and makes practical use of the fact that the struggle for existence has endowed all of the contemporary animals with a rational internal organization. In this truly scientific branch of our diagnosis and therapeutics we intentionally injure by the introduction of a foreign substance into a living body, and expect the injury to be converted into a stimulus of the defensive mechanism of the host. A foreign substance introduced into a living being will, under normal conditions, be the cause of a defense which consists, among other manifestations, in the formation of complex substances, known as antibodies, immune bodies, or amboceptors, as Ehrlich erroneously calls them.

Whether the antibodies are formed accidentally by disease or purposely by inoculation is of little concern to us, except that it helps to emphasize the fact that the animal system works on rational principles.

* Read at the meeting of the Chicago Medical Society, Jan. 3, 1912.

We have not been able to demonstrate antibodies in every disease. This may be due to the inadequacy of our methods of examination, but, on the other hand, we should not forget that the animal body is a seasoned fighter, and probably does not depend for its defense on one chemical body, or on one method of fighting only.

Antibodies are considered to be specific. By that it is meant that they have a special affinity toward the substance which gave rise to it. An antibody that has affinity for the erythrocytes of the sheep will not bind those of the rabbit or dog, or any other animal.

In order to demonstrate antibodies, two respectively, three distinctly different substances are required:

1. The foreign substance, the antigen (cell, poison, etc.), against which the antibody has been formed.
2. The antibody produced in the animal as a response to the injury.
3. The so-called connecting substance, the complement.

Bacteria or corpuscles, treated with specific bacteriolytic or hemolytic "amboceptors," absorb the latter and become sensitive to the dissolving action of the complement. An antigen thus treated is called sensitized, and the phenomenon of dissolution is called bacteriolysis or hemolysis, as the case may be.

The substances that produce a corresponding specific action with antibodie are known as antigens. The phenomenon of disappearance of complement in a mixture of antigen and antibody is commonly called fixation, or deviation of complement.

By repeated injections of sheep or human blood corpuscles into a rabbit, we may produce a specific antibody for sheep or human erythrocytes. Antibodies thus artificially produced or increased are known as immune antibodies, or simple immune bodies, and the process by which we produce these bodies is known as immunization.

A foreign body (antigen) bound by its specific immune body (antibody) cannot, speaking for practical purposes, be freed from it again by washing. For instance, red sheep corpuscles bound by an antisheep "amboceptor" do not lose it any more. Such corpuscles are called sensitized. The addition of complement will promptly dissolve them. The dissolution is called hemolysis and the three factors (corpuscles, antibody and complement) which enter the reaction represent what is known as the hemolytic system.

In order to prove the presence or absence of certain toxins (antigen) or certain antibodies, we can make use of the phenomenon of labile or active complement, thus using the hemolytic system as an indicator.

This is exactly the principle that Wassermann has applied to the serum diagnosis of syphilis. He adds the serum of the patient in question to an extract of syphilitic liver in presence of a complement; if the mixture contains the (corresponding) antibody and antigen, the complement will be deviated and will not produce hemolysis with sensitized corpuscles which are added after the antibody-antigen mixture has been incubated for one hour; or, in other words, after it has been given ample time to bind the complement.

SYPHILITIC TOXIN AND ANTIBODY

Wassermann, finding the liver of a congenital syphilitic new-born full of *Spirochæta pallida*, thought he could, by macerating the organ and extracting it with an aqueous solution, get enough specific microorganisms and toxin in the extract to use it as an antigen. It was found, soon after the appearance of his first publication on this subject, that alcoholic extract could be used instead of the aqueous, and that the extract of normal as well as syphilitic organs has "antigenic" value. The aqueous extract is very unstable. It, therefore, had to make place for the alcoholic mixture, and to-day we use the latter almost exclusively, and reserve the aqueous for emergency work only. The aqueous as well as the alcoholic extract contains lipoid substances and soaps, and we can easily show that the lipoids, such as lecithin, cholesterin and protagon, have an antigenic value, provided that they have not been heated for any length of time above 70 degrees, Celsius. But lipoid substances are found in every healthy animal. They are known to absorb and retain toxins. They are then a means of defense and are of necessity increased in disease. We, therefore, should regard them as a physiologic, normally present, protecting substance, as antibodies rather than as toxins, as Wassermann thought he had extracted.

Syphilis, being a mild infection, apparently does not injure the human body severely and acutely enough to stimulate it to the production of a specific antibody. It is the mildness of this infection which permits it to become a chronic affection, or it may be that the defensive mechanism of the human system is lacking the properties necessary for the production of such an antibody. What we are testing for in the Wassermann serum reaction is probably a toxin, a metabolic product, produced by the *Spirochæta pallida*, and which not even necessarily needs to be specific, and not an immune body produced by the human system in response to the syphilitic invasion.

Investigation concerning the nature of syphilis in a clinical way as well as by laboratory experiments tends to show and force one to the conclusion that the white race has formed more or less of a symbiosis with the *Spirochæta pallida*.

It takes apparently several generations to throw off this microorganism, but while it inhabits the human system, it affords protection somewhat against severe new attacks. What is called malignant syphilis is found, as history shows, almost exclusively on virgin soil.

In patients with good vital resistance the positive Wassermann reaction quickly disappears under the influence of specific treatment. The presence of mercury or arsenic in the blood current and in the tissue of the patient interferes with the growth of the spirochete, the production of syphilitic toxin is reduced or completely stopped, although the microorganism is still alive. But at the same time I will not neglect to mention that experiments which I have made with animals to which mercury or arsenic had been administered show that their inactivated blood serum, if added to the hemolytic system, will promote hemolysis. I believe, for instance.

that the negative Wassermann reaction which we get soon after the administration of salvarsan is in part due to the presence of arsenic in the blood current. The conclusions I draw from my experiments made up to date in this direction are the following: Either we are testing for a toxin or some of the antisyphilitic drugs dissolved in the serum of the patient under treatment augment the action of our amboceptors, and are instrumental in bringing about a negative Wassermann reaction.

PREPARATION OF THE PHYSIOLOGIC ANTIBODIES

Antigen.—A liver of a congenitally syphilitic infant is cut into small pieces, then rubbed with sand in a mortar, and finally extracted with about four to five volumes of 96 per cent. alcohol at 37° Celsius, for about three to six days. This alcoholic extract is diluted with three times its volume of salt solution, and then titrated in order to determine its "antigenic" value.

It has been made a general rule to use for the Wassermann test one-half of the minimal dose of "antigen," which causes complete inhibition to hemolysis. One-third or even one-fifth of this dose may be enough to cause fixation of complement, with syphilitic serum, but it is best to use the test dose as large as the anticomplementary action will permit.

PREPARATION OF THE PATIENT'S SERUM (THE SYPHILITIC TOXIN)

About 1 to 2 c.c. of the patient's serum is needed to make the test. A very convenient method to obtain it is by puncturing the palmar side of the finger-tip with a small but sharp lancet and filling two or three glass capsules by milking the finger. Or we introduce a stout hypodermic needle into a vein at the elbow and remove 5 to 10 c.c. of blood. In order to bring the veins into prominence, a piece of rubber tubing is placed a little above the elbow. The pulse should not be obliterated by the pressure of the tube. The hypodermic needle should be 1 to 1½ inches long, and should have attached to it a rubber tube, the free end of which is placed into a sterile test-tube to gather the blood.

After the serum has separated from the clot, either by letting the containers stand or by centrifuging them, it is pipetted off and inactivated at 56° Celsius for one-half hour. Cerebrospinal fluid is obtained by spinal puncture, and can be used without inactivation. The test dose is double that of the blood serum.

Experience seems to show that there is more free and active syphilitic toxin and a less amount of other chemical components which might interfere with the complement action in the patient's blood before meals than after; it is, therefore, a wise precaution to take the blood for examination whenever possible shortly before meals. A human serum becomes anticomplementary after a few days of standing. The change sets in more rapidly in the incubator or at room temperature than in the ice-box, and inactivation for ten minutes or more, as given in some text-books, does in few cases only restore it to normal action. I do not use a negative control serum longer than forty-eight hours, and the person from whom I take the blood for such purpose must be a robust, active individual, living mostly an outdoor life.

The Complement.—We commonly call complement a fresh and active serum that is used to reactivate another serum. A serum is called fresh and active for twenty-four hours after the bleeding. The complement action of a serum disappears completely within a few days to a few weeks, if the serum is kept on ice, and an exposure to a temperature of 55° to 56° Celsius will destroy its action in thirty minutes. Complement remains active longer for bacteriolysis than it does for hemolysis. We cannot separate the active substance complement from the fresh serum, and we do not know whether the substance really exists within the living tissue, or if it is formed outside of the animal body only.

The observations I have made in my daily work with the Wassermann reaction and with special experiments made for this purpose, lead me to believe that the complement is a ferment and not a substance that can be bound by an "amboceptor," as Ehrlich and Wassermann contend. My reasons for this conclusion are:

1. Complement is destroyed at a temperature at which we would expect a ferment to perish.

2. I found accidentally that the activity of an amboceptor could be increased by adding a slight amount of acid. It, therefore, occurred to me that there might be some analogy of action between rennet, pepsin and complement. The former two can be activated by hydrochloric acid. I found that a dilution of 1:20,000 hydrochloric acid in physiologic salt solution would not have any hemolytic action itself, but would activate complement, and could be used in the hemolytic system instead of an "amboceptor." During the last year and a half I have made, at the Columbus Medical Laboratory, several hundreds of comparative Wassermann tests, the results of which will appear in a later paper. Suffice it here to mention that the tests made with hydrochloric acid show a higher percentage of positive reaction than those made with antisheep rabbit serum, and that this is in all probability due to mineral substances contained in some of the human serums, which neutralize the hydrochloric acid, and in this way check hemolysis, in spite of the presence of free and active complement.

3. The activity of the complement in a given solution of sensitized antigen does not depend on its absolute quantity as it would have to if Ehrlich's side-chain theory were applicable to this reaction. An increase of the quantity of the "amboceptor" permits the use of a smaller amount of complement, and the increase of complement permits the use of a smaller amount of "amboceptor" in order to produce the desired reaction (hemolysis). In other words, if we use a large amount of "amboceptor," we need a relatively small amount of complement, or vice versa.

4. The amount of complement needed to perform the reaction and the amount of complement actually used up are not the same; the amount varies according to temperature, and the length of time needed for the reaction. The percentage of complement used is larger in slow reaction, taking place at relatively high temperatures, than in a quick reaction, taking place at relatively low temperatures. This is exactly the way an active, a labile substance, a ferment, would act; it is injured and

destroyed because it acts, but not because it is bound by the sensitized antigen. It disappears from the mixture after the reaction has taken place only, or because the reaction is taking place.

5. Other conditions being the same, the activity of complement depends on the concentration and not on its absolute amount present. The same amount of complement that will dissolve several units of sensitized antigen blood corpuscles will dissolve one unit only if the amount of solution is increased accordingly. Complement, therefore, acts according to its concentration, like a ferment, such as rennet, used in the making of cheese, but not like a substance that is bound in certain definite proportions by a second substance.

6. Every other factor being constant, two units of a patient's serum do in their reaction with antigen destroy less complement than one unit does. This fact, again, is entirely contrary to what we would have to expect if the relation of factors entering this reaction were quantitative.

7. Those who make Wassermanns every day must be well acquainted with the fact that, other conditions being apparently the same, we need more complement on a cold day than on a warm one, and also more in the winter than in the summer, in order to produce the same amount of hemolysis in the same length of time. This, again, can be explained easily if we regard complement as a ferment. At such times the solution as well as the instruments with which we work are at a relatively low temperature.

8. Complement will not be deviated in a mixture of syphilitic serum and lipoid substances if the latter have been heated for a certain length of time above 70° Celsius. We find the same condition with casein thus heated; rennet will not coagulate.

9. The degree of activity of guinea-pig's blood as a complement can be reduced to one-half of its original value within a week if the hygiene and sanitary condition of the animal are changed for the worse; this again speaks more for it being a ferment than a simple chemical body.

The process of depriving a fresh serum of its complement is called inactivation. An inactivated serum can be restored to activity by the addition of fresh serum. Complement is always capable of reactivating the serum of his own species, but not every complement can reactivate the serums of the other species.

The complement of the guinea-pig is distinguished by an unusual ability to reactivate the serums of other species. Consequently, it is most often used when it is necessary to substitute the complement of one serum for another, which has been destroyed.

It is apparent from the above considerations that the Wassermann test is but a ferment reaction, which can give us but relative value only, and in which we have to lay special stress on the factors of concentration, temperature and time, rather than on the absolute quantities of the substances entering the reaction. Furthermore, since at least one of the antibodies entering this reaction is not specific, the Wassermann test can be specific in a quantitative way only, but surely not in a qualitative.

We find in our clinical work all degrees of inhibition to hemolysis, and we are not justified in basing a diagnosis of syphilis on a weakly positive Wassermann reaction unless other constitutional affections, such as tuberculosis, yellow fever, malaria, chronic alcoholism, chlorosis, etc., can be excluded. This serum reaction which tests for toxins, but not for antibodies, will give us reliable positive information about an active specific infection, but not about an infection in which the production of toxins is essentially reduced or has stopped completely for the time being. In other words, a negative or Wassermann reaction does not necessarily mean absence of syphilitic infection, especially not if the patient is under specific treatment.

Complement is a ferment. The Wassermann serum reaction is a ferment reaction whose rational basis rests on the laws governing fermentation, and not on the Paul Ehrlich side-chain theory.

I wish to express my sincere thanks to Drs. Gehrmann, Evans and Wesener, the staff of the Columbus Medical Laboratory, for assistance in my experiments.

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DISCUSSION

Dr. A. S. Warthin: I agree with Dr. Baumann in two points, but not in the third. We must believe that the complement acts like a ferment; and that it is quantitative, but I do not think our knowledge is in such a state that we can say positively that this is only a toxin-reaction. The question of anti-body formation in syphilis remains yet to be settled. The third point emphasizes, however, what was brought out in the other discussion. A negative reaction does not mean that syphilis does not exist. The patient may have syphilis, active syphilis, and yet the Wassermann reaction be negative. Whether this is because there is no toxin or no anti-body, I am not prepared to say. That must be worked out a little further, but I do think that the clinical significance of the negative reaction must be emphasized. We find that many laymen have a definite idea that a negative Wassermann means no syphilis, and it is a very dangerous thing for such an idea to be allowed to spread.

The spirochæte adapts itself wonderfully to the body, and the body adapts itself wonderfully to the spirochæte. We may find the spirochæte in large numbers in tissues that show no changes at all. We may well ask ourselves why. Does the spirochæte ever get out of the body after infection has once occurred? How many generations of the organism remain in the body? There is a wonderful mutual adaptation between the body and the spirochæte, and that is a point that must be considered much more carefully in our future studies of syphilis.

Dr. William L. Baum: Whether it is an anti-body or a toxin that we are testing for cannot be determined. We know that there are physiologic anti-bodies in every organism, and it would be for some purposes much more convenient to say that we are testing for a toxin, the result of activity of the spirochete. To me the side-chain theory has been a very satisfactory explanation for the reaction. The points brought out by Dr. Baumann are new to me. If we are testing for anti-bodies, why should we get a negative Wassermann when we know that no spirochetes are present? Dr. Baumann will admit that he has seen negative Wassermanns in individuals in whose lesions spirochetes have been found. If that is true, we would expect to find active organisms present and get a positive Wassermann. Whether the failure is due to faulty technic is difficult to state, because the examination is a difficult one. I would think that the reaction is valuable, but not an infallible test. It may be good in a quantitative rather than in a qualitative manner. It has not nearly the significance in my eyes that has been given it by Ehrlich. A negative reaction is absolutely no indication, from

the therapeutic point of view, as to how much treatment a patient should be given. A negative reaction obtained every six months for a period of years in one who had syphilis years ago, but who now has no symptoms, would incline me to believe that he was cured of the syphilis. The more negative reactions accompany the absence of clinical symptoms, the more certain I would be of the absence of the disease. Therefore, a Wassermann, if negative, is, in a measure, a check on the ultimate treatment of the patient, but only after the lapse of a considerable period of time. It has a diagnostic value in old cases, and in old obscure conditions, when you get a strongly positive reaction in the absence of other signs, it is of much value, but even then the diagnosis should be qualified, for in many of these cases we cannot find any evidence of syphilis. However, it is probably as satisfactory a solution of the question in an individual case as can be hoped for, and the mere fact that they improve under treatment does not necessarily mean that the disease was specific. It certainly indicated a line of action which may be applicable to that particular case.

Dr. F. G. Harris: As to the significance of the terms antibody and antigens: A few months after Wassermann published his paper these terms were given up. It was conceded that the so-called syphilitic antigen is not an antigen in the true sense of the word, nor is the so-called antibody really an antibody. Whether we should turn the terms around and say that in the Wassermann test we are testing for antigens or for toxins is questionable, and cannot be settled by an ipse dixit statement. There are many arguments against such an hypothesis. For instance, it is well known that many of the lower animals give a positive reaction, and if we are testing for toxins, such substances would not be present normally in the lower animals. The fact that there are some tropical diseases that give a positive Wassermann reaction would be an argument against such an hypothesis.

The so-called antigen is composed of lipoids, but whether these are protective substances no one is prepared to say. If they are, what relation have they to syphilis? Normally there is no immunity to syphilis, nor does one attack of the disease confer immunity. Now we know that some organs, for instance, the heart, produce these substances which act as antigens, and we would naturally expect that an organ saturated with the protective substances would enjoy a certain immunity to syphilis, which we know is not the case as regards any organ or tissue of the body.

As to hemolysis. Dr. Baumann said a negative Wassermann reaction after the administration of salvarsan was due to the arsenic in the blood. In answer to that I would submit that comparatively few cases show a negative reaction following salvarsan. Especially is this true the older the infection of syphilis is. If in a case of secondary syphilis giving a positive Wassermann reaction we administer salvarsan, one would expect, if Dr. Baumann's statement was true, to get a negative reaction after from three to four hours, because then there is a maximum amount of arsenic circulating in the blood. As a matter of fact, that patient will still give a positive reaction for days afterward. Therefore, a negative test is not due to the arsenic, mercury or iodid *per se*, but is due to the fact that these medicines kill a certain number of spirochetes, so that there are not enough so-called antibodies present to bind the complement.

As to the variation in the amount of complement necessary in winter and summer: In the last four years I have made about 10,000 tests, but never noticed that the season had any influence in the amount of complement to be used.

As to the effect of heat on the antigen: I have not found that heat destroys its properties; in fact, I have, in making the liver extract heated the mixture close to the boiling point and the antigen still remained active.

As to the effect of temperature and time: If the test is done properly the influence of temperature and time, beyond certain limits, is practically *nil*. If the complement is all absorbed the test is positive and remains so until autolysis or bacterial hemolysis takes place.

Now, as to the value of the Wassermann reaction: It is being constantly discredited by the work of its incompetent friends. In a recent meeting of the German

Medical Society of this city, five cases of clinically manifest syphilis were demonstrated, four of which were reported as showing a negative Wassermann test. Reports such as these are what have brought the test to disrepute. I regard a positive Wassermann reaction as a symptom of syphilis. I regard it as the most constant symptom of syphilis and the most persistent. I expect a positive reaction in every case of manifest syphilis. I have never found a negative reaction in a case showing symptoms of syphilis, except once, a case with mucous plaques. This case gave a partial reaction, but there was not enough serum to make a proper test.

In my work I have endeavored to make the test more sensitive and more practical. I adhere closely to the original Wassermann technic. My modifications have been slight, and not in the principals of the reaction. The reason we have so many questionable results is because there has been a tendency to use some modification of the original Wassermann technic. The Noguchi reaction is not a bit more simple and not nearly as reliable as the original Wassermann. This is conceded by all European authorities and by most of the authorities in New York. The two reactions are not synonymous.

Another source of error is the complement. This is the keystone of the whole reaction. It is absolutely necessary that it be titrated before each test. Another mistake is to do the reaction with only one antigen. For more than two years I have been making the test with five different syphilitic liver extracts, varying in delicacy, so that it is usually possible for me to tell whether a given serum comes from a patient with manifest syphilis or one who has been under treatment. All of my antigens give a positive reaction in frank secondary syphilis. Two of them, with cases that have had prolonged treatment, give a negative or partial reaction. I consider it very essential that the test be made with more than one antigen. Another procedure which I think increases the delicacy of the test is that *in addition* to the usual positive and negative control sera, I use serum from cases under treatment. This becomes a more delicate criterion than just the serum from cases of frank syphilis.

Dr. Warthin cited a case of general paresis with a negative Wassermann. This is something I have never seen. If there is one disease that should *not* give a negative Wassermann, it is paresis.

Dr. W. T. Mefford: One factor of the greatest importance in the Wassermann reaction, to my mind, is a correctly working hemolytic system. I adjust my hemolytic system not to work in a shorter time than 10 minutes or a longer time than 15 minutes. When all the materials are added this will lengthen the working of the test from 15 to 30 minutes, and this time has given me the most correct readings and results. Many human sera have an amboceptor for sheeps' corpuscles; this amboceptor does not work in union with the sheep amboceptor, nor does the excess of human amboceptor have any effect on the test unless an excess of complement has been added, or that the antigen bodies or products are not sufficiently strong to bind all the complement; the complement being bound by the antigen products the amboceptor in the human serum will not work to produce hemolysis of the sheep's corpuscles. A too strong sheep-rabbit amboceptor will withdraw part or all of the complement from the binding antigen bodies and you will get hemolysis even in a strong positive serum, and it is for these various reasons that a perfectly adjusted hemolytic system is of such importance in the working of the test. So far as the reaction being always positive in an active lues I must disagree with Dr. Harris. You will have clinical manifestations of active lues of the brain or cord and frequently get a negative reaction. It is in this class of cases that we must not disregard clinical manifestations because of getting negative Wassermann. It is in a hidden or unseen lues, when we get a positive reaction, that the test is the most valuable. Just why we get a negative reaction in known active lues occasionally, I cannot say, unless it is due to the poor vascular supply in the parts which are being invaded by the *Spirochæta pallida* and not a sufficient amount of the antigen products given off or thrown into the blood circulation. A negative reaction is of value in the treatment of lues; no treatment should be stopped as long as the reaction is positive, and

should be continued some time after the reaction is negative. A negative reaction is of value in differentiating certain local organic lesions. As a rule active visceral lues gives positive reactions; with specific treatments clinical manifestations disappear as well as positive reactions becoming negative would indicate a lues of whatever organ was affected. However if the symptoms in the diseased organ continued or progressed it would be an indication that the active lues was not the cause of this diseased organ and the lues probably located in some other parts of the body. As to whether an individual is ever cured of lues I am very doubtful; if one is cured, who and how can you tell which luetics are cured and who can tell when lues will become active again. Some well treated cases become active in a short time. Some poorly treated cases go many years without showing clinical manifestations. One individual gave a history of 25 years after the initial lesions before showing any clinical manifestations. This individual was treated a short time and pronounced cured. Another gave the history of 45 years after the initial lesions before showing any clinical manifestations; this individual was treated a short time and pronounced cured also. Each individual was beginning tabes at the end of these periods, and gave positive reactions. It is for the reason that we cannot tell who is cured and when the disease will become active again that one should continue treatments from year to year with an occasional Wassermann test, to govern the treatment.

Dr. Maximilian Herzog: Dr. Baumann made a number of statements. Some are not new or startling; others are new, but I think they are not correct. It has long been known that the Wassermann reaction is not an absolutely specific reaction, and that many antibodies behave like enzymes, in that they act within certain time limits at certain temperatures, etc. It is therefore not a startling fact that hemolytic complement should behave like enzymes, and this does not prove that it is not an antibody.

Then the doctor claims that the agency which acts in the Wassermann test is a toxin. It certainly would be a peculiar toxin which should behave like that. From what we know of the body it simply behaves like an amboceptor. Whether an amboceptor is an enzyme or not is another question.

I can add to what Dr. Harris has said concerning the Wassermann test after the use of salvarsan, that it is not true that the Wassermann test is soon negative after the arsenic compound. It takes sometimes a long time before the test changes to negative. I have seen cases that had three doses of salvarsan, and for months the test remained positive. The doctor also said that the test becomes positive in the presence of hydrochloric acid. It is a well-known fact that enzymes are sensitive to mineral acids, and when you use a serum not high in alkalinity and you add hydrochloric acid, there is an excess of acidity and you may get hemolysis.

In glanders, a disease much like syphilis, the complement-fixation test, used by veterinary serologists, is absolutely specific, because we must use a product of the glanders bacillus in order to get the antigen. The doctor has, it seems to me, not proved his point that the Wassermann reaction is not what it is supposed to be —a complement-fixation test.

Dr. William J. Butler: Dr. Baum maintains that the Wassermann reaction is of little value to the syphilographer, and Dr. Harris says that every time syphilis exists the reaction is positive. The syphilographer deals with syphilis in a different light from what we do. We see more syphilitics in the later stages, cases of paresis, tertiary and quartan syphilis. I agree with Dr. Harris that there is nothing more essential than accurate technic, and that many are doing this work who are not competent to do it. I am convinced of that from the frequency with which I hear of reports from different sources, announcing different results. However, with a full appreciation of the importance of technic, I want to say that Dr. Harris is overenthusiastic in his observations, unless he has confined them quite well to cases of syphilis that did not include the whole category of syphilis in all its stages. I think Dr. Baum's position is wrong. There is nothing of more value than the Wassermann reaction. There are cases without clinical manifestations in which the reaction is positive. If we accept Dr. Harris'

statement, untold harm will result to our patients, and I am convinced that the clinical view is the one that interests us the most, and is the one in which, unless you have a proper view of the situation, we will do harm rather than good in many cases.

We often examine cases of the quartan type of syphilis which give a negative reaction, and yet the patient has syphilis. He improves under antisyphilitic treatment. In the case of patients with skin manifestations, mucous membrane manifestations, and so forth, we get a positive reaction in almost 100 per cent., although every once in a while there is a case of manifest syphilis where it may fail. However, that is not the most important class of cases for the reaction.

I want to emphasize that the Wassermann reaction, when present, always means syphilis, but it does not mean that the thing which has attracted your attention, and which is not the important thing for the patient, does not mean syphilis. A negative reaction does not mean that the thing from which the patient is suffering is not syphilis.

Dr. F. O. Tonney: There is one phase of the subject, which I believe should be given further emphasis, especially in light of some of the rather unusual statements which have been made here to-night. I have in mind the very evident and urgent need of improvement in the technic commonly used in many cities of the United States. It is a deplorable fact that many questionable methods and unscientific details connected with the Wassermann test have found ready acceptance in this country, with the result that the test as it is commonly performed is probably not more than 50 to 60 per cent. accurate.

This to my mind appears to be due to two general causes: First, the test with its introduction into the United States has been very widely commercialized. While I do not wish to be understood as saying that commercial work is necessarily faulty, since there are unquestionably some thoroughly competent and conscientious workers engaged in this field, yet the statement in general holds true that in commercial work there is a distinct tendency to adopt short cuts in order to save time and expense, and that these short cuts often detract from the value and reliability of the test. Possibly, the acceptance of present methods has also been due, to a certain extent, to peculiarities in American temperament. The original test was elaborated by a German. The German as a type is a lover of technic, he is slow, accurate, painstaking and very patient. The American on the other hand is a lover of speed; his very impatience makes him prone to adopt with a blind confidence any procedure which promises to enable him to attain his object quickly. Unfortunately short cut methods, when applied to the Wassermann test are all too often possible only at the expense of accuracy.

The influence of conservatism, however, is now making itself felt. There is a distinct tendency among the better class of workers to go back to many of the details of the original Wassermann technic, to discard a number of questionable procedures and to adopt strictly scientific though more time-consuming methods.

This is as it should be. The Wassermann test is nothing if not exact. It is strictly quantitative; every ingredient used is variable; the system of units is upon a strictly relative basis; all parts must be in a state of balance quite comparable with that of the chemist's delicate quantitative scales. A seemingly trivial omission or commission may serve to throw the whole mechanism out of adjustment. The test calls for an infinite amount of care and painstaking attention to detail. If not done in this manner, it had best not be done at all, since erroneous conclusions as to the value of the test inevitably result.

We will have taken a long step forward when we make up our minds that we cannot safely omit the titration of complement and amboceptor prior to each test; that we cannot with safety cut short the incubation period; that when something goes wrong we cannot safely patch matters up by adding a little of this or that, but must begin all over again and titrate all the ingredients before setting up the test; that the drop method of measuring ingredients, so commonly used in this locality, is not sufficiently accurate for so delicate a piece of mechanism as the Wassermann test. The size of a drop, as the chemist will tell you, depends upon a number of factors, the specific gravity of the fluid, the size of the dropper,

the temperature and certain accidental influences, such as jarring or shaking and the presence of grease on the tip of the dropper.

Some of the more important improvements now being adopted are the replacement of the drop method by the pipette method, which is more scientific and gives greater assurance of accurate results; the adoption of a larger unit of volume whereby the inevitable inaccuracies in measurement become proportionally negligible; the use of high potency amboceptor having a titre of not less than 1 to 1,000, preferably higher. Furthermore, the original extract of syphilitic liver certainly seems to give a more serviceable antigen than the normal organ extract of Noguchi. The specific extracts are, therefore, coming more and more into use. Of these both the aqueous extract of Wassermann and the simple alcoholic extract are satisfactory. The simple alcoholic extract, however, is less subject to deterioration.

I feel that a plea for more general adoption of improved technic in the conduct of the Wassermann test is timely. Of the fact that there is urgent need for such improvement, there can be no doubt. In the meanwhile, until it is upon a more satisfactory basis than at the present time, it is not wise to draw hasty conclusions as to the limitations of the test in its relation to clinical syphilis, except in those instances in which there is certainty that the methods employed are above the possibility of reproach.

Dr. Adolph Gehrmann: The study of syphilis, tuberculosis and glanders has been without much result as to anti-body or antitoxin formation. That is not the way the body fights the invasion of these diseases. When patients do not recover there is an advancing spread of microorganisms in the body. When the disease lingers in a subchronic way, and the body gets to the point where it can throw around the spirochætes or other bacteria a wall and cut them off, there will be recovery, otherwise not.

As regards the technic, there has been drawn into the discussion more than is demanded. It is very difficult to start out at this moment and make a Wassermann test and be sure of what you are doing. The only way to get reliable results is to do one test after the other, and use the work of the last for the next, working one test in with the other at the time, otherwise you must make elaborate preparations before you can begin.

Dr. Thomas L. Dagg: We employ Noguchi's method in the Chicago Laboratory. It averages as well as any best employed to-day. We use human blood amboceptor and we standardize it accurately, likewise the antigen. We use the 50 per cent. alcoholic syphilitic liver extract, as it does not lose its antigenic properties if kept at or near the freezing point. In doubtful cases we control it with the watery extract. We use a 5 per cent. suspension of blood corpuscles, according to Noguchi, taking one drop of the blood to 5 c.c. of the normal salt. The blood suspension used had better be made freshly every day. Noguchi says it is best after twenty-four hours, but we do not find it that way. It seems to hemolyze too readily, therefore we make a fresh suspension every day. I use a small capillary pipette, and the total quantity of complement used is two drops from this small pipette. It is the least variable of any of the factors. Two drops of antigen and two drops of complement are mixed with four drops of the suspected inactivated serum, in 1 c.c. normal salt solution and the mixture incubated for one hour at 37 C. Then 1 c.c. of blood suspension and 2 units of amboceptor are added, and this is again incubated for two hours and then placed in the ice-box over night.

From my experience in the Wassermann work, I have been impressed with the apparent ease with which syphilitic infection might be conveyed. As examples, one patient, a young girl had a primary infection of the cheek, the result of an abrasion with a dental instrument. In another case a musical instrument conveyed the infection causing primary lesion on the lip; and numbers of doctors and dentists infecting their fingers in their professional work.

I believe that the Noguchi method has many advantages over the original Wassermann, principally because it is a more practical one, in that we have human blood to work with all the time. It is not convenient to have to use sheep's blood.

I might add in conclusion that we are now studying comparative results with Noguchi's acetone insoluble lipoids as an antigenic factor, and if found practical will adopt it as a routine.

Dr. Baumann (closing the discussion) I reported in my paper the results of scientific experiments made more or less separately from my routine work with the Wassermann serum reaction. I have not described the technic of the Wassermann reaction, nor have I tried to modify the technic of this reaction. I am, therefore, surprised to see the discussion confined almost exclusively to points which have no connection with my paper. I am surprised at this apparent degeneration of the discussion into a meeting for the advancement of extraneous motives.

With the exception of Dr. Warthin, none of the gentlemen taking part in the discussion seem to be able to grasp the contents of my paper and discuss it.

I will give credit to Dr. Harris and Dr. Herzog for their endeavor to discuss some of the points brought out by my paper, and I regret exceedingly that I am forced, in spite of myself, to the conclusion that their scientific medical training did not prevent them from falling into the trap set for the unsuspecting physician by our drug manufacturers. But at the same time I seriously object to the suggestion that these gentlemen should be held personally responsible for their lack of scientific training. The fault lies with our medical teaching and our medical literature. It is business in the guise of medical science which, as a logical sequence and of necessity produces such men.

This is all I have to say in response to Dr. Herzog's expostulation, and in reference to Dr. Harris' idea about immunity and lipoid substances in the syphilitic infection.

As to the Wassermann reaction being positive right after the injection of "606," I would like to inform Dr. Harris that the amount of arsenic administered in a full dose of "606" is about sixty times the average dose of arsenic, and that this is possible only because the chemical activity is carefully bound, and it takes the human body time to disassociate arsenic from the compound salvarsan.

The merits of Dr. Harris' experiments with antigen and complement I will not analyze. I leave it to the future to show if these experiments are any credit to their author.

As to Dr. Harris' statement concerning the case of general paresis of Dr. Warthin, I should say that I have had at least a dozen cases of general paresis at the Detention Hospital which gave such slight reaction as to come under the negative cases. I will state further that I do not know if I made ten thousand Wassermann tests; in fact, I do not think I did, but I know that I am making at the present time three to four times as many tests as anybody here to-night. When I first started, about two and a half to three years ago, to make the Wassermann at the Columbus Laboratories, we had about one test a month, and to-day I am making ten to twenty tests daily.

ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF THE ILLINOIS STATE MEDICAL SOCIETY

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APRIL, 1912

THE CANDIDATES FOR THE NOMINATION FOR GOVERNOR REPLY TO OUR QUERY AS TO HOW THEY WOULD TREAT THE STATE BOARD OF HEALTH PROBLEM

As is well known to all our readers, the state-wide primaries to nominate candidates for the office of Governor, and other state officials, as well as representatives in the Legislature, and United States Senate, will be held Tuesday, April 9. For the first time in this state, every citizen will have the opportunity of expressing his individual preference as to the men whom he wishes to have stand for the office in question. Without doubt the medical profession will have much influence at this critical period. The profession has rapidly awakened to the reality of the disgraceful conditions which have prevailed for many years, and we are badly mistaken if they fail to make their influence felt, especially when it comes to the matter of selecting a candidate for Governor, the official who has the appointment of the State Board in his hands.

In order that the members of the State Society may be informed as to the attitude of the various candidates, on the State Board of Health reorganization, we addressed the following letter to all the candidates, with two exceptions. A copy of the letter was sent to Mr. West, campaign manager for Mr. Deneen, but no acknowledgment has been received from him. No copy was sent to Mr. Yates or his manager.

Several of the candidates to whom the letter was sent have not answered. One of these, Mr. Jones, is represented as saying: "I have found the doctors all over the state opposed to the State Board of Health, as constituted at the present time and held in office by Governor Deneen." Furthermore, we understand that the doctors of Kankakee County are sending out circulars in the interest of Mr. Small, based largely on Governor Deneen's failure to properly organize the State Board of Health. A number of medical societies have adopted resolutions demanding that the Governor re-organize the State Board of Health.

Mr. George P. Englehard of Chicago, is a candidate for the nomination of Congressman from one of the city districts. This gentleman should be forgotten by medical men. He is an active member of the League for Medical Freedom.

First we reproduce our letter, and this is followed by the answers received in alphabetical order of the name of the candidate.

Dear Sir:—On behalf of the organized profession of the state I take the liberty of addressing you to ask whether you favor the reorganization of the State Board of Health, in the event of your election to the office of Governor, to which I understand you aspire.

It may not be known to you that this Board was organized in 1877, after prolonged agitation on the part of the State Medical Society had created a demand for a department to care for the lives and health of the people by securing better education of physicians and sanitary laws on the statute books. For many years the Board carried out the purpose of the act under the late Drs. Rauch and Reilly to the great credit of the state, and the great benefit of the people. But for many years the Board has been a figurehead medically, and to a large extent a political asset of the Governor in office.

The present secretary has used the office for political purposes until he has completely lost the confidence of the medical profession. He now claims to have ensconced himself under the civil service act. Notwithstanding prolonged efforts of some of the best men of the state, it has seemed impossible to bring about a much needed change in this department.

We believe that there is no department of state government which if properly and energetically conducted would be so beneficial to every individual of the state. While this board is of special concern to the medical profession, on account of the subjects with which it deals, its practical work in medical education and in introducing proper sanitary and hygienic control throughout the state, if properly administered, is a protection to every citizen.

Your reply will be printed in the April issue of the ILLINOIS MEDICAL JOURNAL and reach nearly 6,000 physicians.

Hoping for an early reply, I am Yours very truly,

March 24, 1912.

To the Editor:—I am in receipt of your letter of the 20th inst., representing certain conditions which you allege to exist in the State Board of Health, and asking me whether I favor a reorganization of the State Board in the event of my election as Governor.

I am sure you would not expect me to answer your question definitely without having had opportunity to investigate the charge you make. I have no specific knowledge on the subject matter and can only state generally that if elected Governor I would not only try to do my duty, but would, so far as lay within my power, require others connected with the government to do theirs. I know of no reason near or remote why I should be any more tender footed or mealy mouthed on the subject of the State Board of Health than in respect to any

other board or department of government, but you will appreciate the fact that it would not become me at present to state specifically what I will or what I will not do. If elected I will of course be glad to give careful consideration to any complaint that may be made. Yours very truly,

SAMUEL ALSCHULER.

VANDALIA, ILL., March 25, 1912.

To the Editor:—I have your communication of March 23 with reference to the organization of the State Board of Health. In reply would say that if elected Governor of the state of Illinois it shall be my purpose to attempt to render each and every board organized under the laws of the state of Illinois efficient. I shall endeavor to effect in so far as possible the carrying out of the purposes for which the board was established. The State Board of Health shall be no exception, and in so far as it is possible under the laws of our state, I shall endeavor to intelligently organize this board so that it may bring about the most beneficial results to the whole people of the state of Illinois, and in so far as that may be advantageous to the medical profession in the interest of the enlightened, honest, and active progressive members of the medical profession in this state, and before doing anything will advise with the leading members of the profession.

If elected Governor of this state, I shall not organize the State Board of Health or any other board on a basis of political advantage to myself. I have announced publicly that if elected I shall not ask for reelection at the close of my term; that I believe it to be to the advantage of the whole people of the state that the man who holds the office of Governor of this state be free from any temptation to build for himself a political machine for reelection, and consequently I have pledged myself in advance not to ask for renomination or reelection. This leaves me free to carry out honestly and intelligently the duties of the office without fear or favor, and will leave me free to give the same honest and intelligent attention to the organization of the State Board of Health as to any other department of the state government. Very truly yours,

JOHN J. BROWN.

March 25, 1912.

To the Editor:—In answer to your letter of the 28th instant, would state that I have not had the opportunity to inquire into the efficiency of the present secretary of the State Board of Health or its officers. If elected governor I shall take occasion to do so and will give the State Medical Society full and fair hearing before I take any action in relation to reappointment or retention of the present officers. If any of the officers of the Board have been "using the board for political purposes" I certainly will not reappoint them. More than this, as at present advised, I cannot say. Very truly yours,

E. F. DUNNE.

SPRINGFIELD, ILL., March 26, 1912.

To the Editor:—In reply to your letter of the 20th inst., wherein you ask "whether you favor the reorganization of the State Board of Health," I am pleased to state unhesitatingly that I do.

I believe that this board as much, and perhaps more than any board in the state, needs an entire overhauling, and it should be absolutely separated from machine politics.

If I am elected governor I will select for members of this board the very best physicians in the state, in considering *only* fitness for the position to be filled, and will view applicants from no other viewpoint. I will attempt to make this board such a one as the law enacting it contemplated. I am, Doctor,

Yours very truly, BEN F. CALDWELL.

March 28, 1912.

To the Editor:—Your favor of the 20th at hand, and if elected Governor, I will appoint a Board of Health that will represent the very best and highest elements of the medical profession of the State of Illinois.

Yours very truly, LEN SMALL.

SYMPOSIUM ON DISEASES OF THE EYE

We call particular attention to the Symposium on Diseases of the Eye and Prevention of Blindness, which was held in Chicago Feb. 8, 1912, under the auspices of the Chicago Women's Club, South Side Branch of the Chicago Medical Society and the Chicago *Tribune*. Dr. Thomas A. Woodruff presided at this meeting and gave an excellent address outlining the status of the subject, and the remarkable fact that Illinois in this, as well as in many other sanitary and health lines, is far behind the other populous states of the Union.

In Ohio we understand the state has in its employ a graduate of the Institution for the Blind, who is delivering lectures on the Prevention of Blindness, in every county seat and school district of that commonwealth. It is high time that the whole state of Illinois was arousing itself to activity in this very important matter, and there is no doubt that an intelligent effort in the next ten years would decrease the cases of blindness at least 50 per cent. A large part of the responsibility of prevention of blindness results with the medical profession. A part of this is due to the ignorant midwife, who should be placed under better control, and a good part of it is due to the indolence of the medical profession in not taking hold of the modern methods of treatment of infantile ophthalmia. We call particular attention to this symposium, and trust it will be read by every member of the state society.

MEDICAL EXPERTS AND MEDICAL EXPERT TESTIMONY

Probably no department of professional activity so much needs regulation as that of the appearance of the profession in the courts of justice. Our professional brethren of St. Louis have taken this matter up, appointing a committee to consider the matter, the head of which is our old friend and schoolmate, Dr. F. R. Frye, professor of neurology in the medical department of Washington University. The report of this committee covers the matter so thoroughly that we have thought it well to bring it to the attention of our readers, and hope it will lead to some action in every county society in Illinois.

GRADUATE SCHOOL OF MEDICINE AT HARVARD UNIVERSITY

The Harvard Medical School of Boston announces that on and after Oct. 1, 1912, all graduate instructions in medicine will be administered in a department under the faculty of medicine, thus placing it on the

equality with the medical school proper, and the dental school. This is not exactly a new enterprise, as graduate teaching has been carried on at Harvard for years. The growing demand for such instruction together with the appreciation of great benefit of such an opportunity to the profession and to the public leads to this plan of a more systematic organization and great development of this work. This is the first time in this country that the development of graduate medical teaching has been undertaken on university basis. No doubt the profession of the entire country will be interested in this enterprise, and give it the enthusiastic support which it deserves.

EYE, EAR, NOSE AND THROAT SECTION OF THE ILLINOIS STATE MEDICAL SOCIETY

This section, as indicated in our March issue, has been fully organized, and begins its work with a banquet on Tuesday evening, May 21, in the sun-parlors of the New Leland Hotel, Springfield. The plan is to organize the section during this dinner. Wednesday will be devoted to the scientific program, and Thursday will be given over to clinics held at St. Johns and Springfield hospitals. It is anticipated that fifty or sixty specialists in this line will attend the banquet, and of course all members of the profession will be welcomed to the scientific program and the clinics to follow. It is evident that the time has come to recognize the specialists more fully in the work of the state society, and we believe that this move will be very profitable and popular.

THE SPRINGFIELD MEETING

Amid all the press of political excitement and the stress of practice we hope our members will bear in mind the annual meeting of the State Society, which will be held in Springfield, May 21, 22 and 23. The meeting, as all meetings at the capital have been in the past, promises to break the records in attendance and interest. A glance at the preliminary program printed in another column, indicates that the scientific treat will be well worth while. Dr. S. A. Knopf, of New York, the foremost man of all the world in combating the great white plague, will deliver the address in medicine, and Dr. Dudley P. Allen, of Cleveland, the oration on surgery. We understand there will be a valuable symposium on that live topic, the modern treatment of fractures. The new section on diseases of the eye, ear, nose and throat have also arranged for a program, which will be found interesting both to the specialist and the general practitioner.

A program of entertainment for Wednesday night will include vaudeville at a high class theater, and a band concert, reception and dance at the Leland Hotel. Many will come in autocars, for which ample garage room will be found near the headquarters.

Forget your troubles, forget your case,
Remember the date, remember the place.
Come by the dozen, come by the score,
And boost the society for one year more.

THE PATIENCE OF THE PEOPLE

"Is there any other intelligent people so long-suffering as the American people? All sorts of humbugs — fake patent medicine, fake doctors, fake religions, fake investments flourish here as perhaps nowhere else on earth. And our people just laugh at themselves and go on being humbugged. Alas, my masters, where is it goin to end?"—*Northwestern Christian Advocate.*

A DOCTOR'S O. K. BEFORE YOU WED
A MOVE IN THE RIGHT DIRECTION AS SUGGESTED BY DEAN SUMNER

MARRIAGE LICENSES
PHYSICIAN
MARRIAGE LICENSE WILL NOT BE ISSUED UNLESS APPLICANT HAS PHYSICIAN'S CERTIFICATE SHOWING HIM TO BE MENTALLY SOUND AND PHYSICALLY FREE FROM ANY INCURABLE OR COMMUNICABLE DISEASE.
O.K.
O.K.
O.K.
UNFIT
UNFIT

Copyright, 1912, by John T. McCutcheon.

The above cartoon by McCutcheon is reproduced through the courtesy of the *Chicago Tribune.*

MARRIAGE OF THE UNFIT

Dean Walter T. Sumner of the Episcopal cathedral of SS. Peter and Paul, located in the Chicago West Side red light district, has stirred up a tempest by announcing that no more marriages will be celebrated at the cathedral beginning Easter Sunday unless the would-be bride and groom present physicians' certificates of health. Bishop Anderson and

the clergy of the cathedral are said to concur in his ultimatum. This ought to receive the endorsement of the enthusiasts for eugenics who are agitating this question both in medical and social circles. Doubtless Dean Sumner's experience as a pastor in that district and especially as chairman of the Chicago Vice Commission convinced him that radical action was necessary to stem the stream of vice and crime at its source. As was to be expected his announcement was received with varying emotions. The more conservative ministers thought that the subject was one for the State to control; others endorsed the plan enthusiastically. Rev. Johnston Myers opposed the idea. As quoted in the *Chicago Tribune*, he said: "Would you let a doctor examine you or your sweetheart as cattle are examined before they breed? Of course you wouldn't. The whole thing is silly, absurd. If any man is diseased and is refused the sacrament on that account, let him come to me and I'll marry him."

Perhaps some of the physicians who feel that their income has been impaired by the general activity in public health work lately will now open Wassermann laboratories and get ready for the rush for Sumner certificates. Rev. Myers' choir will please practice that fine old hymn, "Oh, what will the *harvest* be?" Another point to be considered in restricting marriage is the output of illegitimate children, which in Paris amounted to 38.7 per cent. for 1904-1908, as published in the official statistics in 1909. This is said to be largely due to the excessive amount of red tape necessary to secure a license to wed. The difficulty of securing legislation to restrict marriage of the unfit will probably leave the subject for some time to come to such voluntary effort as enlightened reform may accomplish by education. Dean Sumner deserves the endorsement and encouragement of the medical profession. Probably the Indiana plan of sterilization in selected cases could be used to prevent our having the French experience in the matter of the illegitimate.

THE NATIONAL LEAGUE FOR MEDICAL FREEDOM AND THE HOMEOPATHIC SCHOOL

(From the North American Journal of Homeopathy)

The National League for Medical Freedom has welcomed all the motley throng of medical discontents of whatever fad or ism as fish to their nets. There is every reason to believe that the Christian Scientists are affording the chief financial and moral support to the opponents of the Owen bill. Senator Works recently delivered a two or three hour harangue on the bill, and his speech was printed in full by the *Christian Science Monitor* of Boston and widely distributed. Senator Works is well known to be a Christian Scientist, and his wife is said to be a Christian Scientist practitioner. The pedigrees of the principal men active in the League have more than once been published in the *Lancet-Clinic*. For some time this league has attempted to enlist the homeopathic school in their support. A few isolated homeopaths have openly supported the purpose of the league. Only one homeopath of any eminence has engaged himself in active opposition to the Owen bill. This

man is Dr. Crutcher, who recently spoke in Cincinnati for the National League for Medical Freedom. It is not unfair to say, however, that the eminence with which we have credited this gentleman has been acquired through these activities. Prior to his fame acquired as an "eminent lecturer" for the league he was a more or less obscure practitioner of Kansas City. The league has frequently attempted to spread the impression that the homeopaths as a school are in sympathy with their aims. This is certainly not the case. All the homeopathic journals except one have remained cold to the warm advances of Fowler and his crew of Christian Scientists and other medical malcontents and antis, this or that.

The general point of view of the homeopathic school is set forth in a vigorous letter published last week in *The Journal A. M. A.* It is an excellent statement of what the homeopathic standpoint should be.

A friend addressed Dr. DeWitt Wilcox, of Boston, and attempted to enlist his aid in opposition to the Owen bill. Dr. Wilcox replied by letter, as stated. He said in part:

My conclusion is that the more I learn of the League for Medical Freedom the less use I have for it, and the deeper is my conviction that it is at the bottom a thousand times more selfish and self-seeking than the American Medical Association ever dreamed of being. I believe that the instigators and framers of the League are infinitely less for the welfare of the "dear public" and its physical protection than any body or set of men who ever banded themselves together. I am of the opinion that the League was conceived in selfishness and born for that single purpose. It goes without saying that there are many excellent men like yourself who are members of the League, but all such have been drawn into its meshes by the sophistries and false pretenses put forth to catch the unwary. They need you good people for just one purpose, namely, to get their chestnuts out of the fire, which chestnuts—"patent medicine," impure foods and drugs, fake methods of practice, and many other money-making humbugs—are in danger of being destroyed.

If the Owen Bill threatened one-tenth the danger to the public welfare which the real animus of the originators of the league threatened, then I would say "fight the bill to the finish." Just consider a moment, my dear doctor, what the league stands for as represented in Senator Works' speech. It seeks to annul or belittle all the great discoveries made in medicine during the last fifty years. It practically wipes out the germ theory of disease. It would abolish all public health boards. It would not insist on quarantine of infectious diseases. It would terminate at once all public school medical inspection. It would prohibit compulsory vaccination. It scoffs at typhoid protection in the army. It would only too gladly wipe out all restrictions on pure foods, drugs and medicines. It would annihilate animal experimentation *in toto*. To be sure Senator Works does not say all this in so many words, but it is there and easily read between the lines. * * * If we of the Homeopathic school are so afraid that the dominant school will legislate us out of existence that we must call to our aid the medical quacks, the "Christian Scientists," the poison food squad, and all other medical sore heads, then, I think, it is better that we die a respectable death and have a decent burial. For my part I would rather be licked fighting honorably with honest comrades than win by the aid of Hessians. This "League for Medical Freedom" is not our fight; it is the soreheads' fight.

If there is not enough truth in homeopathy and stuff enough in her followers to stand such legislation as is proposed in the Owen Bill, then she deserves just such an ignominious death.

The above appeared as an editorial in the *Lancet-Clinic*, Jan. 6, 1912. The following, contributed to the *Pacific Coast Journal of Homeopathy* by Dr. Francis B. Kellogg, of Los Angeles, throws another spot-light on the constitution and workings of the National League for Medical Freedom:

Dr. Crutcher denies that any attempt was made to secure the endorsement of the American Institution of Homeopathy at Pasadena. I happen to know that such an attempt was made, for I was myself approached on that occasion by the secretary of the local branch of the league, who attempted to enlist my efforts to secure such endorsement. I could not understand why this somewhat prominent layman should take such an active interest in the equities of the medical profession. I asked a relative of his, who is an old school physician, if he could enlighten me. He laughed at me. "Why, don't you know," said he, "that Mr. N. is one of the pillars of the Christian Science Church?" This first opened my eyes to the fact that the homeopathic school was being used to pull Christian Science chestnuts out of the fire. This is only one of a number of similar experiences, since crowned by Senator Works' speech in the Senate, all going to establish beyond a doubt the substantial correctness of my assumption.

Let me say that I have no argument against the individual right to believe in and to practice Christian Science, but let there be no mistake; the Christian Science Church is opposed not only to medicine (and here is the rub), it is—and logically—opposed to the prevention of disease wherein the hope of humanity rests for deliverance from the ills of the flesh. It would use the homeopathic school or any other means to block the wheels of progress along this line, and it is doing it by going into politics.

Through this same League for Medical Freedom it defeated the bill in the last Legislature providing for the more effective physical examination of school children, the only aim of which was to remove the physical and mental obstacles from the pathway of suffering childhood.

Correspondence

HISTORY OF A NOTED SUIT FOR MALPRACTICE; COMPLETE VICTORY FOR DR. MAMMEN OF BLOOMINGTON

To the Editor:—Permit me briefly to report a history of the case, *Smith* v. *Mammen*. Suit for malpractice, $5,000.

The operation was performed July 31, 1909. It was for a right fallopian tubal pregnancy which had ruptured into the lower right quadrant of the abdomen. There was profuse cervical discharge, so that it was thought best to curet the uterus. After the curettement, a strip of gauze about an inch wide was packed into the cavity of the uterus, and allowed to hang down into the vagina. A bunch of gauze was packed around the posterior part of the cervix, then the position of the patient was changed and the abdominal operation was performed in the usual manner. It was noted that a fecal mass was impacted in the cecum. The fetus and membranes were apparently in a state of beginning sepsis, the nurse's record showing elevation of temperature for several days. Hence a drainage tube was inserted into the lower angle of the wound.

During the abdominal operation, gauze sponges were used, about 4 inches wide and 20 to 22 inches long, having a tape sewed on the end, to which a clamp was attached. During the operation these sponges were counted as they were used, by one of the nurses and again counted after the operation. None was found missing. Before the patient left the operating-table her stomach was washed out, and between 3 and 4 ounces of castor oil poured in with a view of loosening up the impaction in the cecum. My assistants during the operation were Drs. Rhodes and Hart, Dr. Chapin giving the anesthetic. One nurse took care of the sponges and another of the instruments. Patient's own nurse, Miss Charles, remained in her room to prepare the bed for the reception of the patient.

After twenty-four hours the drainage tube was removed from the abdominal wound and another inserted. This remained another twenty-four hours. A light gauze drain was then used to replace the tube. This was left out after another day, when the wound healed up. However, the patient developed a slight temperature and about the ninth day, the lower angle of the wound was reopened and a quantity of pus was evacuated by means of a glass tube. The temperature now fell to normal. Drainage of pus ceased. In a few days the wound healed. The patient's temperature remained normal. Her recovery was complete the twenty-first day after the operation and with the exception of the few days after her return from Fairbury she has remained in good health to this day.

She remained in the hospital until the 25th of August, twenty-five days after the operation, when she left to visit friends in Fairbury, Ill. A very important factor in this case is that the nurse was instructed to remove the vaginal packing, twenty-four hours after the operation. She wrote the order on her record, and a little farther down she wrote, "Vaginal packing removed." I trusted the correctness of her statement. During the patient's stay in Fairbury, she partook of a liberal diet, and her constipation returned. One day she was seized with severe cramps, and decided to return to her home in Bloomington. She was accompanied by her former nurse, Miss Charles. A few days after her return, according to her statement, she passed a sponge into a jar, unaccompanied by fecal matter. The nurse found the sponge in the jar and exclaimed, "Oh! Here is a Brokaw Hospital sponge." A few hours after this the patient had copious evacuation from the bowels.

The nurse had stated that the sponge was a Brokaw Hospital sponge. The patient declared that it came from the rectum. The husband took the sponge, carried it with him and exhibited it to several law firms who declined to take his case. However, the firm of Stone and Oglevie became willing and anxious victims (as the sequel shows) to bring a suit in which so important an exhibit could be produced as a gauze sponge. Its size was about 6 inches square.

About this time, February, 1909, there was published in the *American Journal of Obstetrics* an article by Dr. H. S. Crossen of St. Louis, in which he tabulated several hundred cases of foreign bodies left in the abdomen during operations performed by various operators within the

last fifty years. A copy of this journal was handed to the lawyers by one of our Bloomington physicians. They read the article and so found the greatest encouragement for this lawsuit. The writer of the article had not intended that it should be used for such a purpose, but it served to bring serious trouble to the defendant.

When the case was put to trial the nurse and the patient both testified that this sponge came from the rectum. The testimony of the nurse was objected to on the ground that she could not know where the sponge came from, since the first she saw of it was in the jar. However, the court admitted her evidence. It was this very evidence which caused the appellate court to remand the case after the second trial. The first trial resulted in a verdict against me for $1,500. Numerous errors were alleged and the court granted a new trial. In this trial the nurse's evidence in slightly modified form that the sponge came from the rectum was again allowed to stand over the objections of my attorneys. The second trial resulted in a verdict of $2,400.

The third trial resulted again in a verdict of $1,500. In each case it was evident that the nurse had only removed a portion of the vaginal packing, forgetting the most important part, the shape of which I did not know at the time of the operation. It was placed by the nurse bunched up, between the open jaws of dressing forceps with which I packed it into position. So I was unable to testify that the square of gauze which plaintiff's attorneys were industriously flaunting in the face of the jurors was the same sponge which I packed into the vagina. However, the positive testimony of the nurse that she removed only a strip of gauze, left no other conclusion than that this square was the piece packed behind the cervix. After the operation of curetting all instruments and sponges used for that were placed on a table and pushed out of the operating-room. The two nurses, two doctors and myself testified positively that no sponges of the shape exhibited to the jury were used in the abdominal operation. All of this evidence was utterly disregarded by the jury. It would seem as if the trial judge should have understood that the only evidence for the plaintiff was her own statement and that the verdict was each time contrary to the evidence.

It should be noted that each jury was prejudiced. The reason for this prejudice seems to be evident from the manner in which the case was tried. Each time after the evidence of the plaintiff and the nurse was before the jury, the court allowed hypothetical questions based on evidence which had not yet been produced. Experts — in one trial a physician from Champaign, in another trial a physician from Peoria—and local physicians were put on the stand immediately after the plaintiff and the nurse to answer hypothetical questions as to the possibility of a sponge being inserted into an abdominal wound and finding its way out through the rectum. Of course affirmative answers had to be given to the conditions proposed in the questions. There is no doubt that this explains why the verdict was against me three times. Why a court should allow

expert evidence on something that at the time has not been mentioned in the evidence is hard to understand. Surely the ways of the courts are mysterious in the cause of justice!

The appellate court sums up the case admirably.

The following are extracts from the decision of the appellate court after third trial:

EXTRACTS FROM DECISION (APPELLATE COURT, AFTER THIRD TRIAL)

Numerous grounds are urged by the appellant why this judgment should be reversed, alleging errors of the trial court in the admission and rejection of evidence, in the giving and refusing of instructions, and in the denial of motion to direct a verdict. From the conclusions that this court has arrived at, it is unnecessary for us to determine the errors assigned upon the admission and rejection of evidence or the refusal and the giving of instructions, except the one to find the defendant not guilty.

There is virtually no dispute in the evidence as to the condition of appellee before the operation, or that the operation was necessary to save her life. No one was present at the operation but Dr. Mammen, the appellant, Dr. Chapín, Dr. Rhodes, Dr. Hart, Miss Bolles, now Mrs. Strubhar, and Miss Hopping, now Mrs. Diers. The testimony of all these persons is that no sponge of the size or thickness of plaintiff's exhibit "A" was used in any manner in connection with the abdominal operation upon appellee. The testimony of Mrs. Strubhar is that she counted the sponges, both before and after the operation. Mrs. Diers also testified that the sponges were counted both "in" and "out" by Mrs. Strubhar and that she had entire charge of handling them. These witnesses all testified that after the operation of curettement the cul-de-sac and the uterus were packed with sponges, that one long sponge was packed in the uterus and was left protruding from the vagina, that this sponge consisted of long, narrow strips of gauze sewed together. Upon the question as to where the sponge found in the slop jar, being plaintiff's exhibit "A," came from at the time it dropped into the slop jar, plaintiff is wholly dependent upon her own testimony and unless it can be said that her sole testimony together with the circumstances and conditions shown, establishes the allegations of her declaration, that this sponge was left in the abdominal cavity at the time of the operation, and that she passed it from her rectum while on the slop jar, then this judgment cannot be permitted to stand. The testimony of Miss Charles, the nurse, does not disclose where the sponge came from, and all proper evidence that she could give regarding it was the circumstances and conditions as she noticed them. Plaintiff ordered a great number of physicians and surgeons as expert witnesses for the purpose of showing that a foreign substance, such as a sponge, if left in the abdominal cavity, might, and, under certain conditions, the tendency would be that it would become encysted, slough through the bowels and pass out of the rectum; upon the question as to whether this might or might not happen, there is no dispute in evidence; all the doctors who testified upon that question seem to agree that such a condition might be brought about, but all testified upon cross-examination that with the conditions that this record shows existed with a tube left in the abdomen by Dr. Mammen for drainage, . . . then no foreign substance could have been left in the abdomen at the time of operation. . . . These facts, taken with the uncontradicted testimony on the part of the four doctors and two nurses, that no such sponge was used in the abdominal operation and that other sponges than the one which was left protruding from the vagina were used in packing the cul-de-sac and between the uterus and the walls of the rectum for the purpose of absorbing any secretions that might be produced and for keeping the womb in position, with the testimony of Miss Charles, the nurse in charge, that when directed to remove the packing from the vagina, she did not remove anything excepting the one sponge which protruded therefrom, forces us to the inevitable conclusion that the sponge found in the slop jar passed from the vagina of appellee.

A careful examination of the testimony of these experts can only lead a reasonable mind to the conclusion that this sponge was not left in appellee's abdomen by appellant or those who assisted him in this operation . . .

While it is ordinarily the province of a jury to determine the question of fact, and while the vital point in this case and the right of recovery depends wholly upon a question of fact, the jury must determine that fact in accordance with the weight of the evidence, *and if they utterly disregard the weight and preponderance of the evidence, then it is the duty of the court to set aside the verdict.* Without considering the question of the expert evidence in this record, we find that the evidence of the plaintiff is completely refuted and contradicted by the testimony of the four physicians and two nurses who saw the operation, and there is no reason, so far as the record discloses, why her testimony should be given any more weight than that of the other witnesses who testified in regard to the conditions that are shown to exist, and from the evidence in this record it is more reasonable to arrive at the conclusion that the plaintiff is mistaken in her conclusions as to where this sponge was passed from than it is to arrive at the conclusion that the testimony of these four doctors and two nurses is wilful perjury. . . .

The evidence of the four physicians and the two nurses that no such sponge was used in the abdominal cavity or in the operation connected therewith, in connection with the testimony of the expert physicians that in their opinion, if this wound healed after the insertion of the tube and the withdrawing of the pus on the ninth day after the operation without any further infection or indication of a septic condition, then no foreign substance was left in the abdomen is so clearly against the finding of the jury that we are compelled to hold that the jury *did not carefully weigh and consider the whole evidence*, and to hold that the verdict and judgment are *contrary* to the *evidence*, and must be set aside, and the clerk of this court will enter in the judgment herein a finding that the appellant is not guilty of the charge of negligence made against him by appellee in her declaration.

The judgment is reversed.

The above would seem to be a sweeping decision, but plaintiff's attorneys, still obsessed by the chimera of the sponge and the demonstrations of Crossen's article, applied to the supreme court in a petition to review the evidence. This petition was denied.

In this connection I take pleasure in acknowledging my obligation to all members of our noble profession who gave freely of their time and advice and their evidence. Very truly yours, E. MAMMEN.

Blomington, Ill., March, 1912.

MORE FACTS CONCERNING THE INSTITUTION WITH WHICH PROFESSOR CRUTCHER OF THE LEAGUE OF MEDICAL FREEDOM IS CONNECTED

To the Editor:—In your February issue you failed lamentably to appreciate the exceptional position occupied by the Kansas City Hahnemann Medical College. This institution is probably without a peer in America, if not in the world. It has seven professors of materia medica and an equal number in anatomy and surgery. The principles and practice of medicine are honored by eight professors, although a footnote states that one of the number is dead.

In looking over the list of the faculty it seems difficult to believe that anyone residing anywhere near Kansas City, Mo., or Kansas City, Kan., could by any possibility have escaped a professorship.

A dead man is published as president of the institution, although it is pleasing to note that a vice-president, a secretary, a dean, a register and a treasurer survive.

The announcement assures us that "there is a great and ever-increasing demand for homeopathic doctors," which ought to make pleasant reading for those who like that sort of reading. We are further assured that the "strength of the future physician depends largely on the knowledge received before entering the medical college."

It is further observed that "several years in the university are desirable."

In justice to the institution, I hope you may find space in your columns for this communication. PHYSICIAN.

ANOTHER QUERY: A CHICAGO SCHOOL

BROCTON, ILL., March 21, 1912.

To the Editor:—Reading the article of John Burke, Cicero, Ill., in the March JOURNAL, it calls to mind the Chicago College of Medicine and Surgery of Chicago, now the Medical Department of Valparaiso University, Indiana, which is said to give the first two years at Valparaiso, Ind., and the other two years at above college in Chicago. A student entered this institution last September; he was not a high school graduate, only held a second grade teacher's certificate in Illinois; said he entered clear as to his preliminary education, and would finish the course and graduate from said college in four years. How about this school?

Respectfully, H. C. KERRICK, M.D., Brocton, Ill.

CHARITY AND TUBERCULOSIS

To the Editor:—Sometime during December, the United Charities of Chicago called the attention of the Chicago Tuberculosis Institute to the problem of indigent tuberculosis patients who asked to be sent South and West. Many applicants come to the United Charities with letters addressed "To Whom It May Concern," etc., the letter stating that the bearer of it has tuberculosis and needs to go to another climate, and asking contributions toward the payment of carfare.

The remarkable thing about it is that in many instances these letters are signed by physicians. That this practice is not limited to Chicago is shown from the fact that recently a letter was received by the secretary of the Illinois State Association for the Prevention of Tuberculosis, from a town in Illinois, asking the Illinois State Association to help send a patient to New Mexico.

The United Charities in appealing to the Institute asks that the Institute use its influence to discountenance the giving of such letters as

described above. Probably few people other than professional charity workers realize the amount of suffering people have had to endure who have gone West and South searching for the cure with inadequate means for their support.

In the November *Bulletin* of the California State Board of Health, Dr. George H. Kress, president of the California Association for the study and prevention of Tuberculosis makes this statement: "The great problem in the tuberculosis situation in California is the care, not of the native born who acquire the disease, but of the penniless consumptives who come here in such advanced stages that cure is out of the question, and whose lack of financial means very soon places them on the bounty of the California communities. In an analysis of the Los Angeles deaths from tuberculosis, made several years ago, the writer of this article demonstrated that almost 50 per cent. of the Los Angeles tuberculosis morbidity and mortality was among such penniless persons. So bad did this condition become that last year the writer induced the Los Angeles Conference of Social Workers, through the Associated Press, to send an appeal throughout the country asking eastern organizations to refrain from sending these advanced and penniless consumptives to the southwestern section of the country.

The woe of these sufferers was well set forth in a poem in the January number of *Scribner's Magazine*, entitled "The Exile."

In order to learn the prosaic facts at the basis of such a poem, and to enable us to write a protest that would command attention, particularly of physicians, letters were written in the early part of January to a number of specialists in the West and South asking them to tell what happens to indigent tuberculosis patients who come to their attention. The following are quotations taken from the replies to this letter of inquiry:

FROM CALIFORNIA

I wish to speak of the most extreme case I have ever known of a consumptive who literally died on the curbstone or gutter, being removed from a cellar to the ambulance. This poor unfortunate came to our city in search of health. He had an antipathy to hospitals, and it was impossible to get his consent to remove him to the county institution. No boarding-house will knowingly take a consumptive in this city, and his abode was a cellar with little or no ventilation and more or less damp. Finally, as death approached, he agreed to allow himself to be taken to the county hospital and in the transportation died, as I have said above, and his body consigned to the Potter's field.

We have as fine an equipped hospital as there is in the country, and yet it is so crowded, especially the tubercular ward, that from the second-stage consumptive to those who are dying, the ward is as crowded as a military hospital after a battle.

SPENCER K. SEWELL,
General Secretary, Associated Charities of Los Angeles, Cal.

It is a crime to send a patient with tuberculosis away from home among strangers when he has not the funds to care for himself. If his friends are compelled to make sacrifices in order to purchase railroad fare, he himself is going to be compelled to make greater sacrifices when he reaches the new strange country in which he is expecting to find a wonderful cure, and this of itself jeopardizes the chances that he might otherwise have. It is far better to have intelligent

guidance at home, even under bad climatic conditions, where the necessities of life can be furnished the patient, rather than attempt to regain health in a new country among strangers without the necessary money for a livelihood.

I have scores of patients coming to me each year who have arrived with barely enough money to keep them a month; some without sufficient to keep them a week. These patients do not get well. They have no chance to get well; but if they would live the right lives with proper guidance at home their chances would be greatly enhanced.

A. M. POTTINGER,
The Pottinger Sanatorium, Monrovia, Cal.

The habit of some physicians in giving a note to a consumptive, stating that he desires to go to California, is without means, and asking for donation for train fare, and then shipping him west, is especially reprehensible.

It is reprehensible in that first of all a great injustice is done the poor consumptive himself; for when he reaches the west, without funds and friends, he is battered from pillar to post, and often dies under most miserable circumstances.

It is wicked to send a poor consumptive far from home and friends to die of gradual starvation and home sickness, or as a charity patient in the county hospital, with the last resting place in the Potter's field or a medical college (and as secretary of the State University Medical Department I can testify to the large proportion of tuberculous cadavers), and I am sure that those who send these poor consumptives out into the west do so without thought of the ultimate end of it all.

DR. GEORGE H. KRESS,
Pres. California Assn. for Study and Prevention of Tuberculosis, Los Angeles.

FROM COLORADO

Those of us who have resided in Colorado for some years, and who, like myself, are engaged in this work, examining thousands of tuberculous cases every year, have witnessed many tragedies resulting from misdirected charity on the part of churches, fraternal orders, societies and philanthropic organizations, in furnishing transportation to Colorado to poor consumptives. In the majority of instances these cases were far advanced, and the anxiety and worry occasioned by their lack of, or limited funds, together with the uncertainty of proper housing and protection after reaching Colorado, frequently hastened the end.

It is a grave mistake for consumptives to come to Colorado seeking health unless their financial resources amount to at least $500. The tuberculous patient coming here without funds finds it extremely difficult to obtain employment. In the first place, the supply is greater than the demand; second, business men are not willing to employ consumptives until they have recovered. Finally, the patient who stands an excellent chance of recovering his health under favorable conditions, loses this chance if he follows his usual occupation and is compelled to work before he is well on the road to recovery.

I feel very strongly on this subject, and would urge all medical societies and charitable organizations to emphasize these facts, in justice to the poor consumptive.

C. WALTER HOLDEN,
Medical Director, Agnes Memorial Sanitarium, Denver, Colo.

FROM NEW MEXICO

I trust that you will be able to convince the public that it is a most serious mistake for any consumptive to come to New Mexico who has not sufficient means to support himself comfortably without labor for at least a year. Patients not thus provided with means would do much better to spend what money they have in resting out of doors, adequately protected and well fed and under the care of a competent physician.

COL. H. A. BUSHNELL, Fort Bayard, N. M.

We sincerely hope that the evidence herein set forth is sufficiently convincing to deter any one who reads it from either signing a letter or helping to send poor tuberculous patients from their homes, unless money enough can be provided to pay for their care in a sanatorium, or money enough to keep them comfortably for at least six months without labor, and then only in case it is certain the patient has not advanced beyond the incipient stage of the disease.

It is the personal conviction of the writer, however, after fourteen years of experience in charitable and tuberculosis work, that it is the best thing for tuberculous patients to stay pretty close to home, even if they have plenty of money to go wherever they wish. As for himself, he should take his chances for a cure right here in Illinois in preference to "chasing the cure" in any other state or climate.

JAMES MINNICK,
Secretary Illinois State Association for the Prevention of Tuberculosis.

THE TWENTY IMMORTALS

CHICAGO, March 20, 1912.

To the Editor:—We are interested in your list of "Twenty Greatest Names in the History of Medicine," exclusive of the present century, in the February JOURNAL, and avail ourselves of your invitation to pass an opinion on it and to suggest others. The limitation to twenty names is a narrow one, and we venture that out of a hundred lists no two would be identical, even though compiled by thoughtful men, well versed in medical history. One should be guided by some standards of comparison, such as weight of influence on medical thought and progress, epoch making discoveries and inventions, and life saving methods in practical and preventive medicine, that have reached the greatest results in the preservation, conservation and eugenics of human life.

To begin with, let us eliminate the very first name, "Æsculapius" (probably legendary), for the very reason that he belongs to mythology, and no authentic contribution to medical knowledge can be attributed to him. Then we would cross off the names of Von Leuwenhoek, who was not a physician, but a naturalist, and maker of optical instruments, whose chief fame rests on having confirmed by the microscope, Harvey's discovery of the complete circulation of the blood through the connecting capillaries. For the same reason we would exclude the name of Charles Darwin, one of the greatest naturalists and philosophical scientists; he was not a physician, however, nor did he contribute anything of note to the most important problems of medical research. Now we shall have room for Dr. Charles B. Johnson's suggestion, in the March number, of Vesalius and Koch. For certainly no exclusive list of twenty would be complete without the "father of anatomy" and the immortal bacteriologist. With these we would yield a place to Dr. J. B. De Lee's choice of Semmelweis without crowding Lister from the circle. Both were pioneers and apostles of antisepsis and asepsis in obstetrics and surgery, to each may be credited the saving of untold thousands of lives.

If now we may be indulged we would place three stars of the first magnitude in the stead of Larrey, Simpson and Gross. In place of the first we would choose Von Halmnotty, whose invention of the ophthalmoscope and ophthalmometer solved the problem of accommodation and refraction, and whose practical discoveries in the field of optics alone, rank among the greatest triumphs of modern physiology and the saving of a mighty host from blindness. In the place of Simpson we present our own J. Marion Sims, the father of gynecology, and in the place of Gross, much as we honor him, the name of Emil Behring, whose epoch-making discovery of a curative and immunizing antitoxin for diphtheria ranks next in importance to Jenner's vaccine.

We are curious to hear from the next fellow and pass the list over for further revision.

Very truly yours, ALBERT H. BURR, M.D.

DR. HOWARD CRUTCHER MAKES STATEMENT

ROSWELL, NEW MEXICO, March 27, 1912.

To the Editor:—Please do me the kindness to state in your columns that I have never had any connection, direct or indirect, with the National League for Medical Frauds, nor with any association with an allied name or purpose.

Very respectfully, HOWARD CRUTCHER.

THE OFFICIAL PREPARATIONS OF THE U. S. P. AND N. F.

We believe the medical profession to-day is thoroughly alive to the need of a more perfect materia medica, a more perfect disease-fighting armamentarium with which to combat disease.

Physicians well realize the fact that their profession's progress in diagnosis, surgery, etc., has been most excellent, but the correct application of remedies to meet the condition established by diagnosis has not progressed nearly so well.

With a view of supplying the physician with reliable information regarding the standard, official drugs and preparations of the United States Pharmacopeia and the National Formulary, as well as other reliable drug products, we have determined to open a department in THE JOURNAL with this end in view. We will each month discuss two or more such preparations. This month we will feature the Elixir of Terpin Hydrate with Heroin, N. F., Hexamethylenamine, U. S. P., and the Syrup of Tolu, U. S. P.

ELIXIR TERPINI HYDRATIS CUM HEROINA, N. F.—The Elixir of Terpin Hydrate with Heroin contains 1 grain (0.065 gm.) of terpin hydrate and about $^{1}/_{24}$ grain (0.0027 gm.) of heroin to each dose, the dose being 4 c.c. (1 fluidram). It is flavored with orange and saccharin. It also contains 40 per cent. each of alcohol and glycerin.

Terpin Hydrate is an efficient stimulant and antiseptic to the respiratory mucous membranes, exerting its action in the course of its excretion through the lungs. It diminishes excessive bronchial secretions in a rather specific manner. In fact, all acute and many chronic affections of the respiratory passages form the proper field for its therapeutic action.

Heroin is an artificial alkaloid (di-acetyl-morphin); it is considered less toxic than morphin or codein, both of which it resembles in its physiologic effect, especially as a sedative in cough.

In case of objection to the use of heroin in this preparation, the Elixir of Terpin Hydrate with Codeine, N. F., may be substituted. This contains $^1/_8$ grain of codeine to each teaspoonful dose; or the plain Elixir of Terpin Hydrate, N. F., may be prescribed. Terpin Hydrate may also be prescribed in capsule form, either alone or in combination with other drugs.

This elixir is frequently prescribed in combination with equal parts of the Compound Syrup of White Pine (Syrupus Pini Strobi Compositus, N. F.), which makes an efficient remedy in numerous cases of bronchial affections.

Physicians are warned, when prescribing this elixir, to add "non-repetatur" in their own handwriting, to prevent the forming of a possible heroin addiction, which is as difficult to overcome as the morphin habit.

HEXAMTHYLENAMINA, U. S. P.—Hexamethylenamina is a condensation product obtained by the action of ammonia on formaldehyd. It occurs in colorless, lustrous, odorless crystals, very soluble in water and alcohol, and has an alkaline reaction.

This drug is rapidly absorbed and rapidly eliminated in the urine, although excretion may last several days. It is excreted partly unchanged and partly as formaldehyde, and has the property of rendering this secretion sterile for a long time and in ridding it of bacteria. Its antiseptic power to arrest ammoniacal decomposition of this secretion is truly remarkable at times and in this respect it ranks first among all materia medica products.

Permanent results are best obtained by continuing its administration until some time after the urine has become apparently sterile. In such cases where the drug is indicated, but where the urine is alkaline, formaldehyde may not be liberated; in these cases the administration of the drug should be preceded by a course of benzoic acid.

Ordinary medicinal doses cause no general effects as a rule, but in some susceptible persons it may cause gastric and renal irritation. The average dose is 4 grains (0.25 gm.), and the average daily dose from 15 to 30 grains (1 to 2 gm.).

Hexamethylenamine is an unstable chemical and for this reason should generally be prescribed alone, that is, either reduced to a powder and inclosed in capsules, or in solution in some aromatic water. As a rule, however, capsules and especially tablets of the drug, should not be prescribed, on the general principle that "the stomach and intestines cannot absorb any substance until it is reduced to the fluid form, and these

organs, being generally weak in disease, should not be given the added labor of first dissolving a drug in tablet form (and which may be so hard as to be insoluble)."

While other liquid preparations may be prescribed with a solution of hexamethylenamine, no acid-containing preparations should be so prescribed as decomposition would be liable to ensue, and thus defeat the prescriber's intent.

A compound preparation of this valuable drug may be formed somewhat according to the following formula:

Hexamethylenaminæ	3ii
Lithii citratis	3i
Fluidextracti sabali	3iii
Tincturæ cinnamomi	3iv
Syrupi aurantii flori, ad	3iv

SYRUPUS TOLUTANUS, U. S. P.—Syrup of Tolu is one of the mild expectorant preparations of the pharmacopeia, and constitutes one of our best vehicles in those prescriptions that are intended for the relief of bronchial and pulmonary affections, on account of its very agreeable flavor.

It contains 1 per cent. of balsam of tolu. Its average dose is about 16 c.c. (4 fluidrams), although being used almost exclusively as a vehicle, smaller doses are usually administered.

It finds its chief employment in such cases where the mucus is tenacious and is coughed up with difficulty.

In this connection it may be valuable to state that such adjuvants as bromids, codein, chloroform, heroin, etc., are often greatly beneficial to expectorants, when the cough is distressing; licorice, glycerin or acacia, when the fauces are excessively irritable and a demulcent is indicated; strychnin, when the respiratory center has become weakened, and belladonna, compound spirits of ether, and especially lobelia, when bronchial catarrh excites asthma and antispasmodics are indicated.

Preliminary Program

ANNUAL MEETING OF THE ILLINOIS STATE MEDICAL SOCIETY AT SPRINGFIELD, MAY 21, 22, 23, 1912

MEDICAL PAPERS

1. Oration in Medicine. Some Modern Medico-Sociologic Conceptions of the Alcohol, Venereal Diseases and Tuberculosis Problems. S. A. KNOPF, New York.
2. The Sputum in Tuberculosis. W. H. JAMIESON, Ottawa.
3. Movable Kidney; Sould We Operate or Should the Patient Wear a Kidney Truss? J. E. COLEMAN, Canton.

4. The Slighter Forms of Little's Disease. HAROLD N. MOYER, Chicago.
Discussion opened by Julius Grinker.

5. The Vaccine Treatment of Some Unusual Infections, with the Report of Illustrative Cases. EDWARD C. ROSENOW, Chicago.

6. Report of the Recent Epidemic of Streptococcus Infections in Chicago. ROBERT B. PREBLE, Chicago.

7. Pyloric Stenosis in Infancy, with Report of Cases; Medical Aspect. FRANK X. WALLS, Chicago.

8. The English National Insurance Bill. W. A. EVANS, Chicago.

9. On Cutaneous Reactions in Infectious Diseases. ERNEST E. IRONS, Chicago.

10. Brill's Disease, Mild Typhus Fever, in Michael Reese Hospital. SOLOMON STROUSE, Chicago.

11. (Subject to be announced later.) BERTRAM W. SIPPY, Chicago.

12. Non-Surgical Recurrences of Malignant Growths after Operation. JAMES B. HERRICK, Chicago.

13. Orthostatic Albuminuria. EVERETT J. BROWN, Decatur.

14. Anterior Poliomyelitis. J. H. BACON, Peoria.

SURGICAL PAPERS

1. Oration in Surgery (subject to be announced later). DUDLEY P. ALLEN, Cleveland, Ohio.

2. What Modern Bacterial Research Has Done for Genito-Urinary Surgery. FRANK G. LYDSTON, Chicago.
Discussion opened by B. C. Corbus, Chicago.

3. Diagnosis in Cases of Cranial Trauma. ARTHUR B. EUSTACE AND RALPH C. HAMILL, Chicago.
Discussion by Frederic Besley and A. E. Halstead, Chicago.

4. Pyloric Stenosis in Infancy with Report of Cases. H. M. RICHTER, Chicago.
Discussion by Coleman G. Buford, Chicago.

5. The Abdominal Crisis. ALLEN B. KANAVEL, Chicago.
Discussion by M. L. Harris and William Fuller, Chicago.

6. Anomalies and Malpositions of the Colon, Congenital and Acquired. WILLIAM R. CUBBINS, Chicago.
Discussion by J. F. Percy, Galesburg, Ill., and Carl Beck, Chicago.

7. Treatment of Cancer High in the Rectum. CARL B. DAVIS, Chicago.

8. Fulguration Treatment of Bladder Tumors. HERMAN KRETSCHMER.

9. What the General Practitioner Should Know Concerning Surgical Diseases of the Kidney. DANIEL EISENDRATH, Chicago.
Discussion by Arthur Dean Bevan and Samuel C. Plummer, Chicago.

10. Osteomata and Muscle Degeneration. LAWRENCE RYAN, Chicago.

11. Review of Twelve Cases of Pernicious Anemia. Report of Metastatic Focal Infections in the Puerperium. J. H. STEALY, Freeport, Ill.

12. Indications for Gastro-Enterostomy. EDWARD S. MURPHY, Dixon, Ill.
Discussion opened by C. Hugh McKenna, Chicago.

13. Important Eye Symptoms in Albuminuria of Pregnancy.
A. B. MIDDLETON, Pontiac, Ill.
Discussion by C. A. E. Lesage, Dixon, Ill.

14. Some Interesting Fatalities. A. CAMPBELL, Clinton, Ill.

EYE, EAR, NOSE AND THROAT SECTION

1. Acute Inflammation of the Thyroid Gland. OTTO J. STEIN, Chicago.

2. Adenoid Vegetation of the Nasopharynx.
J. WHITEFIELD SMITH, Bloomington, Ill.

3. Combination Operations between General Surgeons and Otolaryngologists. J. C. BECK, Chicago.

4. Treatment of Corneal Ulcers. C. A. E. LESAGE, Dixon, Ill.

5. Melanotic Sarcoma of the Iris. G. F. SUKER, Chicago.

6. Hemorrhage as a Cause of Blindness. C. B. WELTON, Peoria, Ill.

7. The Treatment of Secondary Divergent Strabismus.
H. W. WOODRUFF, Joliet, Ill.

8. Accidents and Complications Attending or Following the Extraction of Senile Cataract. CASEY WOOD, Chicago.

9. The Brain and Sinus Complications of Otitis Media.
A. H. ANDREWS, Chicago.

10. Operative Treatment in Empyema of the Maxillary Sinus.
C. M. ROBERTSON, Chicago.

11. (Title to be announced later.) W. L. BALLENGER, Chicago.

12. The Traumatic Dislocation of the Crystalline Lens Without Rupture of the Eyeball; also the Report of a Case Treated.
C. F. BURKHARDT, Effingham, Ill.

13. Prevention of Blindness and Conservation of Vision.
THOMAS WOODRUFF, Chicago.

14. Hemorrhage as Related to the Eye, Ear, Nose and Throat. Surgery.
A. E. PRINCE, Springfield, Ill.

PROPOSED AMENDMENTS

To the Editor:—At the meeting of the House of Delegates held on May 18 last, the following Articles of the Constitution and Chapters of the By-Laws with proposed Amendments attached were ordered to be printed in the July and April JOURNALS.

E. W. WEIS, Secretary.

ORIGINAL

ARTICLE V.—HOUSE OF DELEGATES

The House of Delegates shall consist of (a) Delegates elected by the Component Societies; (b) the Councilors; and (c), ex-officio, the President and Secretary of this Society, and the Chairmen of its Standing Committees. It shall be the legislative body of this Society, and shall conduct all business, except such as is otherwise provided for by the Constitution and By-Laws. All recommendations of the House of Delegates dealing with the acquisition or disposal of property of any kind, or with the appropriation or expenditure of funds in any way must be approved by the Council before the same shall become effective. Twenty Delegates shall constitute a quorum for the transaction of business.

(Offered by Black)

ARTICLE V

Lines 14 and 15 to read

come effective. Twenty delegates representing not less than ten counties shall constitute a quorum for the transaction of business.

(Offered by Zurawski)

ARTICLE V—HOUSE OF DELEGATES

The House of Delegates shall consist of delegates elected by the Component societies and President of this society ex-officio. The other officers, Chairmen of Standing Committees and Chairmen of Scientific Section may take part in the proceedings of the House of Delegates but without the right to vote. It shall be the legislative body of this society and shall conduct all business, except such as is otherwise provided for by the constitution and by-laws. All the recommendations of the House of Delegates dealing with the acquisition or disposal of property of any kind, or with the appropriation or expenditure of funds in any way must be approved by the Council before the same shall become effective. Twenty Delegates shall constitute a quorum for the transaction of business.

ORIGINAL

ARTICLE III.—COMPONENT SOCIETIES

Component Societies shall consist of those county medical societies which hold charters from this Society.

(Offered by Black)

ARTICLE III

Line 2 to read

county or local Medical Societies which hold charters.

ORIGINAL

SEC. 4. Only one component medical society shall be chartered in any county. Where more than one county society exists, friendly overtures and concessions shall be made, with the aid of the Councilor for the district, if necessary, and all of the members brought into one organization. In case of failure to unite, an appeal may be made to the Council, which shall decide what action shall be taken.

(Offered by Black)

CHAPTER X—SECTION 4

Line 2

introduce after the word county the following: "Provided that in counties having 300 or more members branch county societies may be organized and receive regular charters as component societies upon application to the council in the usual manner and provided that each branch county society thus organized shall contain not less than 75 members who shall live within a definite circumscribed district and who shall constitute not less than 50 per cent. of the legally qualified physicians living in that district."

ORIGINAL

SEC. 3.—The general section, or each section, as the case may be, shall elect its own chairman and secretary.

(Offered by Coleman)

CHAPTER IV—SECTION 3

And the section officers for such scientific work shall be elected for two years, and the President and Secretary of such sections shall go out on alternate years, and that the committee on scientific work meet as soon as convenient after the adjournment of the State society.

COUNTY AND DISTRICT SOCIETIES

ADAMS COUNTY

The Adams County Medical Society met in regular monthly session Monday, March 11, in the new Chamber of Commerce rooms. President Pittman called the meeting to order. Others present were: Drs. Ball, Nickerson, Williams, Christie, Shawgo, Montgomery, Blickhan, Reiffert, Collins, Miller, Schullian, Wells, Knox, Pendleton, Knapp, Irwin, Stine, Pearce, Center, Bloomer, Ericson, Tripp, Gabriel, Reticker, Austin, Brenner, Groves, Kidd and Koch. The weather was very unfavorable, but nevertheless the attendance was good. During the past month our society has sustained a severe loss by the death of one of its oldest and most faithful members, Dr. W. E. Gilliland of Coatsburg, Ill., whose death occurred February 28, at the age of 79 years. In the spring of 1870 he began practicing medicine at Coatsburg and continued to practice until his death. A committee, consisting of Drs. Williams, K. Shawgo and Nickerson, were appointed to draw up resolutions relative to the death of Dr. Gilliland. They read their report at this meeting. It was received and placed on file. It was moved and seconded that a copy of the same be sent to the family and also that a page be set aside in our records as a memorial to the memory of our departed member. A delicious luncheon was served at the Hotel Newcomb at 12:30 p. m., which was enjoyed by a majority of the members. In the afternoon Dr. Carl E. Black of Jacksonville, councilor for this district, addressed the society on "Displacements of the Colon." The doctor expected to show forty stereopticon slides, but when the time came a very necessary part of the stereopticon had disappeared. Even without the pictures the paper was very instructive and brought forth considerable discussion. We trust the next time Dr. Black visits us everything will go off smoothly. Adjourned.

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Regular Meeting, Jan. 10, 1912

A regular meeting of the Chicago Medical Society was held Jan. 10, 1912, with the president, Dr. J. M. Patton, in the chair. The program consisted in a Symposium on Gastric and Duodenal Ulcers, with the following papers: Dr. Charles L. Mix read a paper on "Symptomatology and Medical Treatment." Dr. J. B. Murphy read a paper on "Surgical Treatment."

DISCUSSION

Dr. B. W. Sippy: This subject is such an immense one that one hardly knows where to begin. As to the frequency of these ulcers, there is a feeling now that the duodenal ulcer is as frequent as the gastric, in fact, more so. Rokitansky found gastric ulcer four times as frequent as duodenal ulcer. An English pathologist found ten ulcers in the stomach to one in the duodenum. And so it has been generally held by pathologists on the basis of such findings, that the gastric ulcer is much more frequent than the duodenal. Within more recent years Moynihan, Mayos and others, who observed these cases at the time of operation, decided that the duodenal ulcer was much more frequent than was formerly supposed. According to their findings it was as frequent, if not more so, than gastric ulcer; something like 60 per cent. being found in the duodenum. That is the living pathology and as opposed to the deadhouse pathology there is a considerable difference.

It is perfectly plain why they have found duodenal ulcer more frequent than gastric ulcer. It is located in a circumscribed area in the small bowel, and when it is present it is prone to lead to complications requiring the services of the surgeon. There is apt to be a cicatricial narrowing, perforation, hemorrhage, etc., and the surgeon is more likely to see these cases than he does the cases of gastric ulcer. Gastric ulcer located on the lesser curvature or posterior wall heals with the barest kind of treatment. The tendency is to heal, unless some complication occurs; otherwise these ulcers heal with or without treatment. They leave their scars; the pathologist finds them; on these findings he bases his statistics. He sees more cases of gastric ulcer; the surgeon sees more cases of duodenal ulcer. We must bear these things in mind when we speak of the frequency of these ulcers.

Post-mortem statistics, old and new, show that pyloric ulcer is not nearly as common as ulcer on the lesser curvature or posterior wall. Only 14 per cent. occur in the pyloric region. That is another point to bear in mind.

As to achylia gastrica, Dr. Mix assumes that the acidity of the chyle has to do with the opening of the pylorus. It is interesting to note that achylia gastrica, where there is relatively no secretion of hydrochloric acid, the stomach empties itself quicker than normal. Giving a test meal and removing it at the end of an hour, we usually get nothing. We must aspirate ten to fifteen minutes after the test meal to find anything, and there is no acid secreted at all. I do not believe that diminished acidity inhibits opening of the pylorus at all.

The symptoms outlined are those of the uncomplicated ulcer, the pain appearing one to two hours after eating and being relieved by food. Frequently ulcers are complicated by pyloric obstruction, perigastric abscess, etc., and in such cases the symptomatology is considerably modified. Pain may occur in the morning before breakfast and is not always relieved by the taking of food. The acidity may be so great that the food taken is not sufficient in amount to neutralize the acid. In the uncomplicated case it is the acidity that produces the irritation.

Relative to gas pains. The feeling of fulness and pressure attributed to gas is usually not due to gas at all. It is caused by the acid irritating the ulcer or the mucous membrane. The patient learns that belching will give relief from these symptoms. He swallows air and aspirates air during the act of belching, and the fulness is relieved temporarily by bringing up a little air. When enough air is in the stomach to overcome the closure of the lower end of the esophagus, the atmospheric air is belched up and the patient gets relief.

The constipation in these cases of ulcer is largely due to the diet. The patient soon learns to abstain from coarse foods, and it is the lack of residue that causes the constipation. The diet is usually restricted to soft foods, foods that are non-irritating; they drink soups and milk and live on cereals; therefore constipation appears.

As to the hyperacidity. Formerly, more than now, that was supposed to be diagnostic of gastric ulcer. Since then it has been shown that it is not such a constant accompaniment of gastric ulcer. More than normal secretion is present in not more than 50 per cent. of the cases; 40 per cent. having normal acidity and 10 per cent. less than normal acidity. But it would be relatively rare that hyperacidity would be absent. If lactic acidity is present, it will speak strongly against ulcer; that is, when present in pathologic quantities. Lactic acidity alone will be of little value; to be of value in diagnosis it must be associated with the retention of food over night, the presence microscopically of large numbers of long bacilli. Then lactic acid becomes important. Under such conditions it is extremely rare that ulcer is present. If there is obstruction of the pylorus and retention of food, it may be ulcer, but always, usually, there is carcinoma complicating it.

As to occult blood. The absence of occult blood does not exclude ulcer, but if on repeated examinations there is no occult blood, it speaks against it. However, the finding of occult blood in the stomach contents is of much minor

importance to finding it in the stool, if hemorrhoids are excluded, and they usually can be so excluded. Blood coming from the stomach or duodenum is practically always digested; we never find microscopic blood elements. Otherwise the statements made by Dr. Mix are quite correct.

Relative to treatment. The question to-day is, first, shall the case be treated medically or surgically? The general practitioner is more or less confused in regard to that after he has made his diagnosis. Is it fair to treat the patient medically, or should he be taken to the surgeon at once? There are very definite indications for medical treatment as well as for surgical treatment. The diagnosis should include not only the fact that ulcer is present, but what complications, if any, exist. Is there any reason for expecting that carcinoma is present? If there is, surgical treatment is indicated. Is there inflammation, narrowing of the pylorus, local peritonitis, perigastritis, perforation, hemorrhage or constant oozing which is depleting the stomach? If so, surgical treatment must be instituted at once. A long-continued history of gastric discomfort must be analyzed carefully. It may resolve itself into repeatedly recurring ulcer, so that the recent ulcer is only of a few weeks' or months' standing. One must determine these points, and as formidable as they may appear, it does not take a long time to decide just what is going on in the given sense. Much may be learned at the first examination, and after two or three days it is nearly always possible to determine accurately just what is the trouble.

If certain complications exist, the case should be treated surgically at once. When these complications do not exist, then the majority of cases are medical cases. When these conditions, which are remediable and removable by the surgeon do not exist, what can he do, except excise the ulcer? Years ago when Doyan spoke of his gastro-enterostomies for ulcer, he attributed the cure to the fact that he produced drainage. The food went into the stomach and on into the intestine. The ulcer was side-tracked; it was relieved from irritation by the passage of food over it, and because of that, the ulcer healed. Of course, as a result of that opinion, operations for ulcers were done in large numbers all over the world.

After the physiologist began to look into this matter, he soon found that a stomach that has been so treated did not empty itself through the gastro-enterostomy opening if the pylorus remained patent, nor did it empty itself any earlier. Experimental work on animals and man showed that it was impossible to make a funnel out of the stomach; that it always emptied itself so long as the pylorus was open and in the normal time. Therefore, the relief to be expected from this operation is not what was formerly expected. The surgeons then learned that the cases that do the best are those in which there are complications, and now a gastroenterostomy is not done except when there is definite obstruction at the pylorus. The surgical treatment is limited to the complications and sequelæ of ulcer and to the excision of old ulcers. Otherwise the case should be treated medically.

The results of management depend largely on the skill employed. The old idea of putting the patient to bed and giving soft foods and certain drugs for a reasonable period of time, and calling it an ulcer cured when the pain had disappeared for five weeks, was simply a case of granulation tissue forming. The ulcer was not healed. Many patients get well under such management. An ulcer of recent standing gets well quickly; the longer the ulcer exists the longer it takes to effect a cure.

The patient can go about his work, as a rule, after six weeks' treatment with small feedings and the frequent use of alkalies. The majority of ulcers, even those 2 years old, will heal quickly, but the ulcer may become so broad and deep that it will never heal, and then excision is indicated. Every ulcer patient should be put to bed and treated energetically and well. Usually not enough attention to detail is given to these cases. That accounts for a large number of failures. If the surgeon did not give any more attention to these cases than some medical men give them, the surgical mortality would be frightful. We must watch the

food carefully, giving the amount and kind required; giving sufficient alkalies, and it will be possible to aspirate at any time during the day and find only a trace of hydrochloric acid.

It frequently happens that these cases which are managed carefully during the daytime, at night when it is generally supposed that the ulcer heals, will pour out a large amount of secretion, so as to irritate the ulcer and undo much of what has been done during the daytime. We must aspirate now and then during the night to see whether much or any secretion is present. These patients, when treated as indicated, if medical cases from the beginning, usually remain medical cases, and it is seldom that the surgeon is called on to operate in such a case. But the patient must be watched every day; every pain must be carefully analyzed. It may be a gall-bladder pain, a complication of ulcer, or if it is an uncomplicated case, it must be hyperacidity that is producing the pain. If pain appears at night, and no acid is obtained on aspirating the stomach, it speaks for something else. If it appears during the daytime when no acid is obtained, a complication exists. It must be remembered that the medically managed case of gastric ulcer does not complain of pain after the first few days. When pain exists there is something wrong; it speaks for hyperacidity or a complication. This brings up the possibility of a mistaken diagnosis. When the ulcer is healing, usually the blood stops in a short time. The stool should be examined for blood every day. In the course of a week or ten days or two weeks the hemorrhage ceases. The ulcer that continues to ooze is a suspicious carcinoma. Then an exploratory laparotomy should be done, and in that way we correct our diagnosis. We must always keep our eyes open to the possibility of carcinoma being present.

Ulcer is relatively rarely diagnosed early because we do not work hard enough to determine the symptomatology present. One must be alive to the possibility of ulcer whenever the patient complains of stomach symptoms. The types of ulcer are many; the ulcer may be latent for a long time. If we wait for the typical signs of ulcer as usually described, by far the great majority of cases of ulcer will be missed because they are usually not typical. If diagnosed early and treated medically before complicatons occur, there is no disease of a serious nature that yields so readily and so comfortably to management as gastric ulcer, even when it is of a few months' standing.

Virchow said that 37 per cent. of all carcinomata affecting the human body are in the stomach. Years ago it was recognized that at least 6 to 10 per cent. of these tumors develop on the site of an ulcer. Years ago an enthusiastic pupil of Saenger said that all carcinomata of the stomach develop at the site of an ulcer. Somewhere between these extremities the truth lies. It is difficult to figure it out accurately. It is very probable that from 40 to 60 per cent. of stomach carcinomata develop at the site of the ulcer, not a recent ulcer, but an old ulcer. Patients with stomach trouble or discomfort nowadays nearly all seek medical advice, so that all of these cases ought to be diagnosed early and such disastrous complications headed off. Unfortunately, ulcer is relatively rarely diagnosed early. They are discovered when they need surgical treatment or when the carcinoma stage has developed. Recent ulcer, reasonably early diagnosed and energetically treated medically will always get well. The symptoms disappear early; the ulcer heals rapidly; the pain disappears and everything goes on smoothly. It is our business to study this subject thoroughly because it is coming to be of more importance every day. The great frequency of carcinoma being found on the site of these old ulcers, makes it imperative that we study these cases carefully, keeping in mind the possibilities of complications of all sorts. We should not put the patient off with an ordinary prescription, such as is usually given, but we should analyze that case and let it be in the foreground that it may be a case of gastric ulcer. By doing so we may in large measure prevent the occurrence of the complications requiring the services of the surgeon, and above all, prevent that tremendous waste of life incident to the development of carcinoma at the site of an old ulcer which has been neglected.

Dr. Arthur Dean Bevan: The members of this society have contributed much to this work, especially the surgical phase of it. Senn's bone plates are a thing of the past, and yet they serve as a stimulus in this work on the stomach. Mayo Robson and his assistants told me at the time that the stimulus for the splendid work done by them was Senn's work with his bone plates. No one's work on surgery of the stomach is referred to more widely than that of Murphy. A review of recent literature shows that the introduction of the button by Murphy into stomach surgery was one of the greatest means of developing that line of work. The splendid results by the world's most famous surgeons have demonstrated the possibility of stomach surgery. The admirable work done by E. Wyllys Andrews in the surgical management of ulcers accompanied by very serious hemorrhage has been one of the best contributions to stomach surgery.

I have been doing a considerable amount of stomach surgery and I have been impressed with the fact that as in brain tumor we are dependent on the neurologists for assistance in diagnosing, so we are in like manner dependent on the internist in these cases of gastric disease. Many patients have been operated on unnecessarily, because of a lack of team work between the internist and the surgeon. That is really a very important criticism to be made of many surgical clinics.

I do not think that we can discuss this subject of stomach ulcer without taking into consideration stomach carcinoma. That has been evident from the papers and the discussion. As a general proposition, I believe that we must regard ulcer of the stomach as a medical condition; one that is handled properly by the internist, unless complications arise, such as those mentioned by Dr. Sippy and Dr. Mix. Then, of course, the patient should be turned over to the surgeon. The tyro in surgery, the man who is doing a little work unassisted by a good diagnostician, is doing many unnecessary gastro-enterostomies or other operations on the stomach. Men who have had a considerable experience in this work demand that there be a distinct and definite indication for the performance of these operations. When we operate on a supposed case of gastric ulcer because of supposed complications, and when on drawing the stomach out of the wound we fail to find any gross lesion, it is our duty to convert that operation into an exploratory operation and acknowledge our mistake. It is a great mistake to do a gastro-enterostomy unless you can demonstrate a gross lesion demanding such an operation.

The second proposition is this: Carcinoma of the stomach is a surgical lesion. It should be handled by the surgeon. We are quite willing to turn over the terminal stage to the internist. Carcinoma of the stomach is as much a surgical lesion as is epithelioma of the lip. Nothing can be done for this condition by medical management except to give relief in the final stages. The trouble is, however, that we are not making our diagnoses early enough. If recognized and treated early, there is a very good prospect for establishing a permanent cure. The mortality of the operation, done early, is about 10 per cent., with 25 per cent. permanent cure. All those not permanently cured we can promise considerable palliation, relief from pain for a period of some months.

To my mind, the most important thing of the whole subject is the recognition of carcinoma of the stomach. One cannot differentiate ulcers from carcinoma absolutely. I think we ought to take this position: cases that seem to us to be ulcer cases should be given the benefit of proper ulcer treatment, and if they do not heal promptly, then an exploratory operation should be performed. If carcinoma is found, a radical operation should be performed at once to offer the patient every chance of a cure.

As to the technic of the operation, it has been shown definitely that the posterior gastro-enterostomy is the best procedure. Murphy uses his oblong button. I believe we can obtain as good results, if not better, by proper suturing, using the Albert-Lembert suture. That this is successful is shown by the fact that peritonitis has been almost entirely eliminated from the ordinary gastroenterostomy. As far as excision of the ulcer is concerned, we have excised a limited number,

but believe that the operation should be reserved for those cases where there is a fair suspicion of carcinoma, or an inability to determine, even after we have opened the peritoneal cavity, whether it is a case of ulcer or carcinoma—and that is by no means infrequent. We have often had the experience of opening the abdomen and finding at the pylorus a large thickened mass, some enlarged glands, and saying that it is carcinoma. An excision was done, and when the specimen was examined microscopically it was found to be simply an ulcer.

One other point should be brought out in the management of these cases. It would be well occasionally when we have not found a gross lesion which we expected as a complication of ulcer, to make either a pyloroplasty or an incision into the stomach and examine the interior digitally.

In one case Dr. Sippy and I had together, the diagnosis seemed to be that of hour-glass stomach. When we opened the abdomen there was no evidence of hour-glass stomach, but our previous findings pointed so definitely to that condition that I did not hesitate to make an incision into the stomach. I examined digitally and found the contraction limited to the mucosa and submucosa. Had I not examined digitally the condition would have escaped us.

I think, too, that in cases of hemorrhage where the picture of a gross lesion seems pretty definite, it might be well to do a pyloroplasty and increase the caliber of the pylorus, even if we find no lesion.

Dr. Charles Spencer Williamson: Everyone who has had a considerable number of cases of gastric ulcer will agree that it is one of the most satisfactory conditions to treat which the internist meets, assuming that the diagnosis is correct and that complications are absent. After three or four days of judicious treatment in bed, the pain stops, the vomiting (if any be present) ceases, the occult bleeding grows less, and everything tends toward the better. I want to emphasize several points: First, if the expert is in doubt as to his diagnosis, how much more frequently will the general practitioner err, the man who sees but few of these cases. A fact not sufficiently appreciated is the possibility of the verification of the diagnosis by treatment. We all get cases where we are in doubt as to the diagnosis, especially when seen early, but if the patient is put to bed and treated judiciously and correctly on the supposition that it is a case of ulcer, and the tenderness, vomiting and pain subside in three or four days, it may be regarded as a verification of the diagnosis of ulcer. Of course, if the symptoms are typical (and they usually are not), there will be no doubt about the diagnosis to begin with.

The second point is the matter of examination of the stools. It has been justly criticized that the management of these cases has been perfunctory. In no other respect is this so true as in the detail just mentioned. It is not uncommon to have the doctor say that there was no blood in the stool, because he looked for it every day and saw none. He will even examine it microscopically, and say he found nothing. Of course, he did not. The importance of the test depends on *who makes it* and *how often it has been repeated*. It is not an uncommon thing to make a large number of these examinations, perhaps every day for weeks, in a patient with marked symptoms, and yet fail to find blood. Then you make a few additional examinations and find it every day. The *intermittent finding* of *occult blood* is the important point in connection with the diagnosis of gastric ulcer.

Another very important point in the management of these cases is to take care of the anemia which is always present. Iron should be administered in some form or other, and if it seems undesirable to administer it by mouth, it may be given hypodermically. Personally, I use it in nearly every case and preferably hypodermatically. It aids very materially in hastening the progress of the case to a cure. These points, if kept before us, and if the case is managed in the manner already outlined by the essayists, will certainly make the medical treatment of simple, uncomplicated ulcer one of the most satisfactory things that the internist has to conquer.

Regular Meeting, Jan. 17, 1912

A regular meeting of the Chicago Medical Society was held Jan. 17, 1912, with the president, Dr. J. M. Patton, in the chair. The program consisted in a Symposium on Infantile Paralysis, with papers as follow: Dr. James W. Jobling read a paper on "Pathology and Prognosis." Dr. Charles M. Jacobs read a paper on "Clinical Aspect and Treatment of Anterior Poliomyelitis."[1] Dr. Peter Bassoe read a paper on "Atypical and Borderland Cases." Dr. John L. Porter read a paper on "Treatment of the Ultimate Deformities."

Regular Meeting, Jan. 24, 1912

A regular meeting of the Chicago Medical Society was held Jan. 24, 1912, with the president, Dr. J. M. Patton, in the chair. The program consisted in a Symposium on Surgery for the Relief of Non-Tuberculous Chronic Joint Disease, with the following papers: Dr. C. A. Parker read a paper on "Pathologic Anatomy." Dr. E. H. Oehsner read a paper on "Local Surgical Procedures."[1] Dr. John Ridlon read a paper on "Orthopedic Measures." Dr. W. A. Newman Dorland read a paper on "The Relation of Pelvic Disease in Women to Osteo-Arthritic Joints." Dr. F. Kreissl read a paper on "The Relation of Ancient Gonorrhea to Chronic Joint Disease."

Regular Meeting, held Jan. 31, 1912

The meeting of Jan. 31, 1912, was a clinical meeting held at the Cook County Hospital, with the president, Dr. J. M. Patton, in the chair. Dr. J. H. Musser of Philadelphia (by invitation) read a paper on "The Treatment of Goiter." Clinical cases were presented by Drs. George W. Hall, S. R. Slaymaker, Frank Billings and D. N. Eisendrath.

SYMPOSIUM ON EXOPHTHALMIC GOITER

PRESENTATION OF CASES

Dr. George W. Hall: CASE 1.—This patient is a young lady about 20 years of age, who entered the hospital in April, 1909, with practically all the typical symptoms of exophthalmic goiter, such as tachycardia, tremor, palpitation, exophthalmos and enlargement of the thyroid gland. She was kept under observation for a period of three or four months, and was given medical treatment without any apparent improvement. She was finally transferred to the surgical service, and was operated on by Dr. M. L. Harris in November, 1909, with excellent results. She is now able to do a good day's work as a maid without any ill effects. As you can observe, there is a slight exophthalmos present; the frontalis muscle shows no transverse wrinkling when the patient's eyes are directed upward. Von Graefe's sign is absent and her eyes converge accurately. There is no tremor of the hands on inspection, which was very marked previous to the operation. The pulse registers 76. A partial thyroidectomy was performed, and as two years have elapsed since the operation, without any recurrence of symptoms, the prognosis as to permanent recovery is good.

CASE 2.—This woman is 49 years of age. She dates the beginning of her present trouble back about five years when she was operated on for appendicitis and some other pelvic disturbances, the nature of which could not be ascertained. You will notice that there is no wrinkling of the frontalis muscle in this case when her eyes are directed upward. In other words, Joffry's sign is present. She has marked bilateral exophthalmos and Von Graefe's sign is present and easily brought out when the eyes are directed downward. Stellwag's sign, or infrequent winking, is also present in this case. The thyroid gland cannot be palpated. There is considerable dyspnea present associated with swelling of the lower extremities due to an incompetent heart, as she has a double mitral lesion. There is considerable pigmentation of the skin, especially noticeable in the region of the clavicles. There is a very distinct fine tremor when the fingers are extended. The pulse averages 120 per minute, so that she presents the classical picture of exophthalmic goiter. I want to emphasize the fact that the onset of these symptoms

immediately followed the operation for appendicitis, and a vaginal examination indicates that the uterus was also removed at the same time. The relation of the involvement of the heart to cases of exophthalmic goiter will be brought out in the discussion.

CASE 3.—This woman who is about 48 years of age, gives a history of having lost several pounds in weight during the past few weeks. She came to the hospital with a diagnosis of exophthalmic goiter and tuberculosis. That she has the latter disease is without question. She also has marked exophthalmos and a very large goiter. Her pulse rate is 96, which can be accounted for by the presence of the lung findings. I might add that the goiter has been present since she was 18 years of age. A careful study of this case, revealing the absence of other important symptoms of exophthalmic goiter, causes us to conclude that it is not a case of exophthalmic goiter. But she presents a combination of symptoms which might cause one to be misled in the diagnosis.

I shall not take your time by discussing the usual symptoms of this disease, as you are already acquainted with them. But I do want to call your attention to a few conditions which may arise in the course of exophthalmic goiter. Some of these patients become insane, and the question naturally arises as to the relations that may exist between the goiter and the insanity. Is the goiter and its abnormal secretion the direct and entire cause of the insanity, or are there other factors entering into the etiology? In looking into this question, I find that predisposing factors are present in about 60 to 65 per cent. of the cases, either in the form of hereditary tendencies, or there is present in the patient certain neurotic tendencies previous to the onset of the symptoms of exophthalmic goiter. In about 15 per cent. of the cases the patients have shown previous attacks of mental derangement; so that the insanity is not purely toxic insanity as one might be led to believe, as 60 to 70 per cent. of these insanities come on simultaneously with the culmination of the symptoms of goiter, while perhaps 10 per cent. follow the onset of the goiter.

It is rather interesting to note that the form of insanity is most frequently of the manic-depressive type; that is, these patients so affected will at times be maniacal, and then at other times will be melancholic. It seems to me that this fact alone would tend to show the predisposition in these cases to become insane, only needing this aggravating cause to precipitate the onset. However, these cases as a rule do not lead to dementia, as one would expect; but they either improve with the improvement of the symptoms of the goiter or otherwise the goiter hastens the exit of the patient.

I wish also to speak of the occurrence and development of exophthalmic goiter with pelvic disturbances. In this relation I would call your attention to a recent contribution to the *Journal A. M. A.*, by Hertzler, who reports several cases which seem to show such a relation. His conclusions are that in such instances the pelvic lesions exist before the onset of the goiter symptoms, and that the relief of the pelvic trouble causes the goiter to improve. He is of the belief that the reflex irritation in the pelvis may be the cause of the disturbance of the secretion in the thyroid gland, and therefore emphasizes the importance of making a thorough examination of the pelvis when exophthalmic goiter exists in women.

I desire in this connection to state that exophthalmic goiter exists about five times as often in women as in men, and that in men it usually runs a more severe course, and that more radical measures are indicated in order to effect a cure.

I shall leave the relations of the heart and exophthalmic goiter to be brought out in the discussion. But before closing I wish to mention the occurrence of exophthalmic goiter in patients afflicted with tuberculosis. It has been shown by F. Bailokur (*Zeitschrift für Tuberculose*, 1910) that in about 8 per cent. of tuberculous patients the symptoms of exophthalmic goiter exist; and it has been clinically demonstrated that the improvement of one of the diseases improves

the other. In other words, by the use of medication which improves the symptoms of goiter there is a noticeable improvement in the pulmonary symptoms, and *vice versa*.

Dr. S. R. Slaymaker: A man, aged 25 years, of cleanly personal habits, living in clean surroundings and eating good clean food, nine months ago had pain in the abdomen, lasting for seven months, continuous and not influenced by eating or drinking. His appetite was poor, bowels irregular. His main complaint was a gradually increasing weakness which made it necessary for him to stop working two months ago. A month ago he noticed a discoloration of the skin. He has lost some weight, but is not emaciated. There is a slight goiter present, but no eye symptoms of any kind. Pulse is usually about 80. Heart and lungs are negative. The discoloration is most marked on the abdomen and back. The genitalia are quite pigmented, also the lower extremities. No pigmentation on mucous membrane. Blood findings show slight anemia. There is a little general pruritus. Temperature is normal. Palpation of the abdomen is negative. The weakness is the only symptom of which he complains. His blood-pressure is between 100 and 105. Stomach contents normal. Urine negative. Diagnosis: Addison's disease, based on, first, weakness for which there is no good explanation; second, abdominal distress; third, pigmentation of skin. Vagabond's disease excluded by personal habits and failure to recover with tonic. Abdominal tuberculosis or other abdominal diseases excluded by negative abdominal findings and absence of temperature.

Dr. Frank Billings: This young man is 25 years old and gives the following history of himself: About four years ago he contracted what was called malarial fever while working in a railroad gang in Arkansas. This illness confined him to his bed for three or four months, and from all accounts was possibly a double infection of malaria and typhoid fever. While in bed he says there was dead-like feeling of the right lower extremity and later of the left also. When he arose after this illness both legs were swollen and the swelling was greater in the evening than in the morning. Following this, the superficial veins of the legs and later of the groins and belly became enlarged. Ulcers formed on the legs, for which he came to this hospital for treatment.

At this time you notice that the legs are edematous and swollen and are covered by bandages to protect the varicose ulcers. The superficial veins of the thighs are apparently not enlarged. The epigastric veins, the radicals of the umbilical and the radicals of the intercostals, the internal mammary and probably those passing inward along the intercostal spaces to the azygos major and minor are visibly enlarged and varicose. The veins of the neck, arms and shoulders and upper chest are not visibly enlarged. By maniplation you will see that the blood in the veins is passing from below upward. This establishes the fact that the obstruction in the veins which causes this collateral circulation is below the heart. If the obstruction were in the innominates or superior vena cava with enlargement of the veins of the belly, as sometimes occur, the current of blood would flow downward.

Where in the belly is the obstruction? It must be in the iliac veins or possibly in the inferior vena cava. If in the inferior vena cava, where is it? Our anatomical knowledge will help in the solution of the question. You will recall that the left spermatic vein empties into the left renal vein. If the obstruction were in the vena cava about the entrance of the left renal vein, he should have a left varicocele. You will notice that there is no enlargement of the veins of the testis. Therefore, the obstruction is below the renal veins if it is in the vena cava. The obstruction may be in the vena cava near the junction of the iliac veins, or it may be in the iliacs.

The patient was admitted to the surgical department for the varicose ulcers. These may be healed under rest with elevation of the extremities and proper surgical dressings. Surgery cannot do more for him because Nature has attempted to relieve the condition by the establishment of a collateral circulation through the enlarged veins which we see.

We canot interfere with this. Possibly he may be made more comfortable by the use of elastic stockings on his legs and a support of the abdominal veins by means of a loose elastic bandage.

Dr. D. N. Eisendrath: CASE 1.—This woman had a tremor so marked that she was unable to continue in her service as a maid. Her pulse varied between 130 and 150; had exophthalmus very marked, bilateral enlargement of the thyroid and marked enlargement of the isthmus; marked tremor of the tongue and extremities. I removed the right lobe of the gland and the isthmus and ligated the inferior and superior vessels on the opposite side. She has improved at least 50 per cent. and has resumed her duties. She still has quite a degree of exophthalmus; pulse is now 96 to 98.

CASE 2.—This is a case of well-marked carcinoma of the floor of the mouth and tongue. The submaxillary glands or internal jugular group of glands are not enlarged, but there is one small gland down the middle of the neck.

CASE 3.—About eight months ago this patient first noticed the enlargement of his left testicle. It is undoubtedly a sarcoma. There is also a prominence below the left costal arch, probably a metastasis in the retroperitoneal lymph-nodes, with perhaps metastases in the kidney and spleen.

DISCUSSION ON THE PAPER OF DR. MUSSER

Dr. F. Tice: In the discussion of Dr. Musser's paper I shall limit my remarks to chiefly one phase of the disease—the cardiac condition. Parry, in 1815, described the pronounced heart manifestations associated with exophthalmic goiter; this patient died later of cardiac failure. Graves, Basedow and many of the earlier observers appreciated the pronounced and important rôle of the heart in goiter. One of the best and more recent contributions was made by Kraus in 1899, in the introduction of the term "Kropfherz," goiter-heart or thyroid-heart.

Practically in every case of goiter, regardless of variety, the heart is more or less affected. The cases may be divided, according to Hirschfelder, into four groups:

1. Those due to mechanical influence by pressure on the trachea, bronchi, vessels or nerves.
2. Hypothyroidism (myxedema, cretinism and achondroplasia).
3. Hyperthyroidism (exophthalmic goiter).
4. Goiter secondary to cardiac disease.

From personal observations of a considerable number of patients with particularly thyroid hearts, I can hardly agree that all forms of goiter are essentially medical cases. Undoubtedly, many can be improved and some of them cured by appropriate medical treatment, but at least a large percentage do much better by surgical intervention.

Dr. A. J. Ochsner: In determining the treatment of a given case of goiter we must consider the degree of toxicity from which the patient is suffering. We have found in our cases that sometimes this toxicity is very slight, as, for instance, in patients at puberty, due to the temporary disturbance in the physiologic development of the patient. In a large majority of these cases, in almost all of them, the hyperthyroidism subsides spontaneously or under treatment. I would insist, first, on rest, physical, mental and emotional rest. Unless all of these are included the hyperthyroidism will be increased, and then the time will come when the balance is against the patient and the hyperthyroidism cannot be removed by any form of non-surgical treatment. I would say that operation is almost never indicated in cases occurring about the time of puberty.

These patients recover permanently, provided this form of treatment is maintained. We must also keep in mind the matter of diet. These patients do better under a vegetable and fruit diet than under a meat diet. We must eliminate tobacco, alcohol, tea and coffee because they increase the toxic effect of the hyperthyroidism.

We must also bear in mind that hyperthyroidism practically always occurs in waves. Patients who are severely ill show these waves, the hyperthyroidism becoming more intense and then subsiding somewhat and becoming less intense. If you operate at the crest of the wave, because you feel that if you do not the patient will surely die, you are making a serious mistake. Let the patient pass over the wave and operate when his condition is again at the ebb. The patient will get well without the slightest difficulty. We must select our cases and operate not because of the fact that a given case is suffering from exophthalmic goiter, but because we cannot effect a permanent cure by the dietetic and rest treatment. We must select the operation which does not transgress the margin of safety, removing as much gland only as the patient can stand, or doing only what can be done with safety, and then the mortality will be reduced considerably. It is now less than one-fourth what it was before we recognized the value of this practice.

Dr. George F. Suker: The eye symptoms associated with exophthalmic goiter are unfortunately depended on too much in arriving at the diagnosis of this condition. I do not consider the eye findings as absolutely essential for a diagnosis. Neither is it necessary to have the entire eye findings manifest themselves in rotation in order to make a diagnosis of exophthalmic goiter. Every one of the extra-ocular eye findings can be produced by orbital conditions other than those accompanying goiter. It is the influence of hyperthyroidism on the sympathetic nervous system which gives to the ocular symptoms their characteristic diagnostic value.

The sympathetic nerves act as a check upon the various motor nerves supplying the intra-ocular and extra-ocular muscles, thereby allowing a uniformity and evenness of action in the synchronous correllated movements of eye and lid, and also in a measure in the movements of the two eyes themselves as in convergence, sursumvergence or deorsumvergence. Then, too, it is the exophthalmus, produced by any other cause than goiter, which can produce symptoms closely resembling the Van Graefe, Moebius, Stellwag and Gifford symptoms, excepting the characteristic jerkiness of a true Basedow's, due to sympathetic nerve involvement.

The Van Graefe, Moebius, Dalrymple, Stellwag and Gifford signs are each more or less dependent on the exophthalmos for their intensity. The more marked the exophthalmos and the more marked the sympathetic nerve involvement the more pronounced are these signs. Indeed, it is often impossible to elicit a characteristic Moebius, Stellwag or Dalrymple in the absence of an exophthalmus, even though the sympathetic is involved.

The extra-ocular signs may be unilateral or bilateral, more pronounced on one side than on the other, irrespective of the size of the thyroid enlargement on either one or both sides of the medial line—though usually they are corresponding.

The more marked the nervous irritability of the patient the more pronounced are the lid symptoms when present.

The exophthalmos never disappears entirely. At first it may recede very markedly, but being dependent in a large measure on the hypertrophy of the orbital tissue, outside of the capsule of Tenon, a complete recession never obtains. The other lid symptoms and Moebius sign do disappear on the cure of the disease. Indeed, a lessening of the eye symptoms is an index to the prognosis.

The lids very frequently evidence the characteristic pigmentations and often show the sweating.

The corneal ulcerations and conjunctivitis now and then present are largely due to the undue exposure caused by the exophthalmos, and are not dependent on the hyperthyroidism *per se*. The enlarged conjunctival vessels are dependent on the exophthalmos and the sympathetic involvement.

There are no characteristic fundus findings in goiter; and unless the element of arteriosclerosis is quite pronounced, associated with high blood-pressure, retinal hemorrhages never occur. Optic neuritis, iritis, cyclitis and chorioiditis, if present, are incidental findings and are not dependent on the hyperthyroidism. At least, no conclusive proof has ever been produced that such is the case. Indeed,

the entire intra-ocular lesions now and then found in goiter are dependent on the diabetes, Bright's and arteriosclerosis, which quite frequently are associated with the hyperthyroidism.

The only optic-nerve involvement possible is a toxic optic neuritis, due to the excessive thyroid secretion, and yet no such case has ever been reported or seen, though many an observer has looked for it.

One lid symptom, namely, the Gifford sign, is valuable. It consists in the increased difficulty in everting the upper lid when the patient is looking down. This resistance is due to the tonicity of Muller's muscle, innervated by the sympathetic. Though the sign is easily demonstrated, yet in the presence of the exophthalmos it is very marked. I am happy to state that Dr. Gifford is a good American, so that not all eye signs and symptoms of goiter are of foreign birth.

The essential points that this discussion wishes to impress is that the eye findings in goiter are not pathognomonic, are not always uniform, and are dependent on the hyperthyroidism and the implication of the sympathetics and unstriped muscles of the lids and orbit. Again, that the characteristic phenomenon in these lid symptoms is their "jerkiness."

CHICAGO MEDICAL SOCIETY—SOUTH SIDE BRANCH

Special Meeting, Feb. 8, 1912

The South Side Branch held a special meeting Feb. 8, 1912, in the Chicago Public Library under the joint auspices of the South Side Branch, the Chicago Woman's Club and the *Chicago Tribune*, with Dr. T. A. Woodruff in the chair. The program consisted in a symposium on "The Prevention of Blindness and the Conservation of Vision." The following papers were read: Dr. T. A. Woodruff addressed the meeting on the subject of the symposium. Dr. William H. Wilder read a paper on "Dangerous Infections of the Eye." Dr. Frank Allport read a paper on "Conservation of School Children's Eyes." Dr. J. R. Cravath read a paper on "Illumination and Vision." Dr. Willis O. Nance read a paper on "Prevention of Blindness." Dr. R. J. Young read a paper on "Prevention of Injuries to the Eyes in Steel Mills." Dr. Hyman Cohen read a paper on "The Cost of Preventable Blindness to the Nation." Dr. Caroline Hedger read a paper on "Midwives and Blindness."

For text and discussion of these papers see page 399, *et seq.*

JACKSON COUNTY

The February meeting of the Jackson County Medical Society was held in the parlors of the Logan House, Murphysboro, Thursday, Feb. 29, 1912, at 1:30 p. m. The following members were present: Drs. Sabine, Ormsby, Horsman, Carter, Daniel, Wayman, Essick and Molz, Murphysboro; Mitchell, McAnaly, Neber, Whitacre, Thompson and Barrow of Carbondale; Tweedy and Hiller of Vergennes. The society has taken up the postgraduate work as outlined by the A. M. A. with a great deal of enthusiasm, and has two classes meeting weekly, one at Murphysboro and one at Carbondale. As this did not start until Jan. 1, 1912, they are not following the lessons strictly, but have picked out the best to finish this year and will follow the outline closely next year. Dr. Molz presented the subject of "The Indications for Operative Treatment of Fractures." Discussed by Mitchell, Ormsby and Sabine. Dr. Ormsby presented "Treatment of Compound Fractures." Discussed by Thompson, Essick, Hiller, Molz and Mitchell. The essayist on the subject, "Treatment of Fracture Dislocations of the Knee Joint," being absent, this was discussed by several of the members present, as was the treatment for fractures in general. Meeting adjourned to meet at the call of the program committee in March, at which time we hope to have Dr. Charles Reed of Cincinnati visit the county and give his lecture on "Medical Education," which he is delivering under the direction of the A. M. A.

CHARLES MOLZ, Secretary.

MADISON COUNTY

The Madison County Medical Society met in Edwardsville on March 1, and was well attended, the following members being present: Drs. Oliver, Beard, Cook, Burroughs, Ferguson, Pfeiffenberger, Schmidt, Hirsch, Dorr, Smith, Hastings, J. W. Scott, Sims, Sutter, Wharff, Barnsback, Wahl, Robinson, Kiser and E. W. Fiegenbaum. Visitor, Dr. O. O. Gibberson of Alton. A committee on public health education was appointed by the chair, consisting of Drs. Smith, Tulley and Burroughs. It was also ordered that our April meeting be held at Collinsville, our June meeting at Godfrey and our July meeting at Highland. The May meeting, in the form of a banquet, was, by a previous vote, assigned to Alton on the request of the members from that city. The guest of the society and speaker of the day, Dr. Willard Bartlett of St. Louis, delivered an address on "The Surgical Treatment of Exophthalmic Goiter," which was highly instructive, and was received by all present with rapt attention. He said in part that little was known as to the cause of hyperthyroidism, and the little that we did know was fragmentary and unscientific. He was inclined to believe that it was some unknown primary cause acting through the central nervous system; something back of the thyroid causing excess of secretion, which was poured out into the circulatory and central nervous systems. He expressed his belief that the disease is often overlooked and that our old chronic nervous cases, with one or more of the cardinal symptoms, such as fast pulse, tremors, goiter and excessive nervousness, are really cases of Graves' disease. In these cases a rapid heart beat is nearly always present, leading to hypertrophy or dilatation and ultimately to the wearing out of the heart. Permanent tachycardia is a bad symptom, and the speaker does not believe such patients get well. The prognosis is nowhere less certain than in untreated cases of this affliction; some get entirely well after the gravest outlook and others die who were not considered in a serious condition; some get well with very little treatment and others resist all forms of treatment except the surgical and not all of those operated on get well. Treatment consists of medical and surgical measures with some mild cases which should be allowed to continue their work, if they can comfortably do so, without any treatment at all. The medical treatment does not demand drugs, but consists of complete physical and psychical rest in bed, isolated even from the family, with ice on thyroid and chest to slow the pulse. Some of the worst cases are too bad for surgery and should be treated as above, and will sometimes get entirely well. Some will improve temporarily, only to relapse. Some internists insist on putting such patients to bed for an entire year, but the speaker strongly advises against such measures, because in some cases melancholia was induced, and some damage was always done by these excessive rest periods, producing rarefaction of bones, atrophy of muscular system and depression generally. The surgical treatment, in cases where there is no loss of compensation, consists of ligating one thyroid artery, under gas or local anesthesia, and a week later ligating the other artery. This is only of temporary benefit, but puts patients in better condition for excision of goiter a few months later. The radical remedy is the removal of the goiter and can be safely done, even when patients have a degree of exophthalmos and hypertrophy of the heart, but should never be undertaken when there is dilatation. Dr. Bartlett explained the technic of the operation very clearly and in detail, much to the gratification of his delighted audience. He was given a unanimous vote of thanks and hearty invitation to visit us again at a future meeting.

E. W. FIEGENBAUM, Secretary.

M'LEAN COUNTY

The regular meeting of the McLean County Medical Society was held in council chambers, Bloomington, Feb. 1, 1912. The president and vice-president being absent, Dr. F. C. Vandervoort was elected president pro tem. The minutes of last meeting were read and approved. The board of censors reported favor-

ably on the following applicants for membership in the society: Drs. J. I. Henline and John J. Condon, Bloomington; William McIntosh, Anchor, and G. W. Rudolph, Cooksville. On motion, report was accepted and membership granted to the above-named gentlemen. Dr. James B. Taylor having recently moved to Eugene, Ore., on his request was granted a transfer certificate to the Lane County (Oregon) Medical Society. Dr. E. P. Sloan read a very interesting paper on "Review of the Surgery of 1911."

NORTH CENTRAL ILLINOIS MEDICAL ASSOCIATION

The thirty-eighth annual meeting of the North Central Illinois Medical Association was called to order by the president, Dr. A. E. Owens of Princeton, at 10:50 a. m., Dec. 5, 1911, in the city hall at Dixon. Roll call of members showed present Drs. A. E. Owens, president; George A. Dicus, secretary; C. C. Hunt, E. S. Murphy, William O. Ensign, J. F. Percy, Ezra F. Goble, second vice-president; T. W. Burrows, first vice-president; S. O. Hendricks, A. B. Middleton, C. M. Cheadle, C. A. E. LaSage, E. B. Owens and Drs. Parker of Peoria, Emory Lanphear, St. Louis, and later Bertram Sippy of Chicago, invited guests.

The minutes of the previous meeting were read and approved. The treasurer's report was read and referred.

Dr. A. B. Middleton, in behalf of the Livingston County Medical Society, extended an invitation to the association to hold its thirty-ninth annual meeting in Pontiac in 1912. Moved and carried we accept the invitation and refer to nominating committee. The local committee of arrangements, by their chairman, Dr. C. C. Hunt, reported that the visiting physicians would be the guests of the physicians of Dixon at a banquet at 6:30 p. m., at the Elk's Club, followed by entertainment.

The following communications were read: Dr. J. C. White regrets not being able to attend and sends best wishes.

Dr. J. M. Kaiser sent regrets, as recent operation prevented his coming.

Dr. W. Griswold of Princeton requests to withdraw. It was moved that the request be granted. Carried.

The regular program was taken up, Dr. A. B. Middleton of Pontiac reading a valuable, instructive paper on "Important Eye Symptoms in Albuminuria of Pregnancy," and presented some excellent drawings to illustrate. A general discussion followed by Drs. LeSage, Goble, Percy, Dicus, Cheadle, E. B. Owens, C. C. Hunt, and Middleton to close. Adjourned to meet at 1:30 p. m. Called to order at 1:30 p. m.

THE RESULTS OF THE TREATMENT OF CANCER OF THE UTERUS BY THE ACTUAL CAUTERY

WITH A PRACTICAL METHOD FOR ITS APPLICATION

JAMES F. PERCY, M.D.

GALESBURG, ILL.

(Author's Abstract)

Percy improves the technic in using the actual cautery in otherwise inoperable cases of cancer of the cervix and body of the uterus, as follows:

1. The abdomen is prepared as for any abdominal operation.

2. The patient is put in full Trendelenburg position.

3. An abdominal incision is made just sufficient to admit one or two fingers of an assistant into the pelvis; in the thin patient, one finger is enough.

4. A fever thermometer indexed to register at least 250 F. is introduced through the urethra into the bladder after the urine is removed by catheter. A second similar thermometer should be in readiness for use in the rectum, if it is necessary to cauterize deeply posteriorly. The fingers can be used here also, and practically may be all that is necessary.

5. The cautery is applied in the vagina through a speculum after the pattern of that of Ferguson. This speculum is made on the plan of a Thermos bottle.

6. There is no use of attempting this work unless the cautery used is perfect in its action, i. e., has more heat under control and at command than will ever be required.

The author refers to the use of the cautery in this disease twenty years ago by the late Dr. John Byrne of Brooklyn, N. Y., and commends it.

Percy bases his technic on the statement of Loeb, that a section of mouse cancer, when frozen, will grow again when transplanted; but if the temperature of a control section is raised to 113 F. plus, it cannot be successfully grown. A special form of heavy cautery is used which will raise the temperature in the pelvis to 120 F. plus. The author shows that by the technic described, the use of the cautery can be made just as accurate and finished as when the knife is used. His article is accompanied by a table of results. He closes as follows:

"If all cases of cancer in the region of the body under consideration were submitted to the improved cautery operation here described, I am more than convinced that we would obtain not only the advantage of no primary mortality; but, in addition, a largely increased percentage of lives greatly prolonged in comfort, with freedom from hemorrhage, exhausting and offensive discharge and mental distress. More than this, an appreciable number of symptomatic cures extending over a period of years would result."

Dr. Lanphear, in discussion, claimed that the high mortality from the knife is due to cases reaching the surgeon too late. He reported having done the second case of hysterectomy in America in 1892, in which he tied off both ovarian and uterine arteries; the parts sloughed out and the patient was living eighteen years later. Dr. Lanphear says he has long since abandoned the knife for the lip, nose, etc. He uses the Paquelin cautery. Dr. Burrows and Dr. Sippy continued the discussion.

Dr. Percy (in closing) cited Lloyd's theory of twenty years ago, that cancer cells will not grow when once heated to a certain temperature. The only early diagnostic signs is hemorrhage, and if mucous membranes are attached and cannot be moved it is cancer.

Dr. Bertram W. Sippy then gave his characteristic exhaustive and interesting paper, "When Should Gastric or Duodenal Ulcer be Treated Surgically, When Medically"? He called attention to the following points: Many cases have been operated on without proper cause; the supposition that food traveled new way made for it until ulcer healed is found incorrect. The old way must have comparatively free exit, but if mechanically obstructed then operate; should not be treated surgically until you have been treated about seven times medically.

1. Is ulcer present? Three to 5 per cent. of autopsies show signs or scars. They may be latent and first sign be perforation; generally have pains after meals and vomiting and may have hemorrhage. Many types, dyspeptic, vomiting, hemorrhages, stenosis. Blood occurs in only 15 per cent. of cases and is often late.

2. What complications exist?

3. Where located?

4. How long has it existed? If carcinoma present becomes surgical the same as in pyloric obstruction of high grade. In continued secretion medical treatment fails, as it is not kept up at night. Location, 80 per cent. on lesser curvatures or posterior wall; the posterior wall ulcer has tendency to get well whether treated or not.

Relative frequency has been considered: one duodenal to nine or ten gastric, but newer pathology shows duodenal equal to or more than gastric.

According to Virchow, 37 per cent. of carcinoma is in the stomach and 10 per cent develops at seat of ulcer. Medical treatment consists of *rest* and *drugs;* diet with cream, as it is the most palatable; rest, four or five days' starvation, then begin one-half ounce of cream and milk each hour first day; 1 ounce each of cream and milk each hour second day; 1½ ounces each of cream and milk each hour

third day. Then add eggs; after three weeks add cereals and two or three eggs a day, which satisfies nutrition and the patient gains in weight. Medicines, bismuth 5 drams in the morning.

Discussion by Drs. Parker, E. S. Murphy and Percy.

Dr. George Parker of Peoria gave an interesting paper entitled "The Treatment of Tetanus by Magnesium Sulphate, with Report of Cases." As magnesium sulphate can produce paralysis, and as death is produced in tetanus from increased activity, hence the theory for its use. One case used 10 c.c. 10 per cent. solution magnesium sulphate and increased to 20 c.c. To a child 20 months old he gave 4 drams of a 25 per cent. solution in abdominal wall and repeated in six hours for seven days, and then two to four injections a day. After the last spasm he continued injections for four days. The dangers of cardiac depression may be overcome by physostigmin.

Dr. Emory Lanphear, in his characteristic way, gave an amusing and interesting report on "Impressions of the Second Clinical Congress of Surgeons of America." He says deaths from ether are occurring which are never reported. He thinks he saw more silk used in buried sutures in these two weeks than in other places in twenty years.

Discussion by Drs. Goble and Percy, who said he attended the congress in Philadelphia for ten days, and while he saw much there, he felt he had gotten more here to-day than in ten days there.

Moved by Dr. Ensign that a rising vote of thanks be given to Drs. Sippy, Lanphear and Parker, and that they be made honorary members of the N. C. I. Medical Association. Carried.

Dr. L. O. Hendrick of Henry gave an interesting paper entitled "The Consumptive Predisposition," the discussion of which was taken up by A. B. Middleton, in the absence of Dr. Pettit. He called attention to there being no law to prevent a tubercular child to sit by the side of a healthy child in school. Drs. Burrows and Ezra T. Goble continued the discussion, and Dr. Hendricks, in closing, recited the case of his wife who had father, sisters and one brother die of consumption, but she was saved by being properly protected, nourished and plenty of air.

Dr. John F. Keefer gave the necrologic report of Dr. Frank Anthony as follows:

FRANK ANTHONY, M.D.

Saturday night, April 8, 1911, Dr. Frank Anthony of Sterling, Ill., was summoned and passed to the great beyond. Death came in Augustana Hospital, Chicago. For several years after the Cuban War, Dr. Anthony was in poor health from disease of the bowel and liver; at times jaundiced. Later he gained in many ways until about a year ago, when he began to show failing strength and presented his case to medical men for aid. He kept up his usual work until early in March, when he was compelled to ease up. Several weeks later he went to the hospital for rest, examination and treatment. After a number of noted men had passed on his case, he concluded to submit to an operation, with the hopes of some relief from bowel and liver trouble. Dr. A. J. Ochsner operated. Exploration revealed a serious state of affairs, and he was closed up surgically without further operative work. He rallied for a day or two only, when he showed great weakness, and the end was apparent. Friends and relatives were summoned and were with him to the end. He was in a state of coma for the last two and a half days. The funeral services were held in his own home in Sterling, in charge of the Masonic order, of which he was a member, and aided at the cemetery by the Spainish War veterans.

Dr. Frank Anthony was born March 9, 1859, at Sterling. His ancestry traced back to Old Mother England. He attended the Sterling school and Beloit College, and took his medical degree at Rush in the spring of 1881. He immediately associated himself in medical practice with his father, and excepting the time spent in Cuba, followed an active professional career all his days in Sterling in his boyhood home. He was married twice and had two daughters by his first wife. His wife, two daughters, three sisters and a brother survive him.

Dr. Frank Anthony was a member of the Presbyterian Church and Phi Brotherhood. He was a charter member of Company E, Sixth Regiment Illinois National Guard and was its first lieutenant. Later he was appointed surgeon of the Sixth Regiment, with rank of major. He served as major during the Debs railway strike in Chicago in 1894. He went with that company to Porto Rico in the Spanish-American War, and was mustered out of service in October, 1898. He continued, however, with the National Guard for about two years, when he resigned. In his professional life he was local surgeon for the C. & N. W. Railway for a number of years. He was also one of the promoters of the Whiteside Hospital. He held memberships in the Western Surgical, Gynecological Society, American Association of Railway Surgeons, A. M. A., Illinois State Medical Society, Whiteside County Medical Society and Twin City Medical Club of Sterling and Rock Falls.

Dr. Anthony was devoted to his family and kin and to his friends, and was held in esteem in his community. He was called to hundreds of homes to relieve disease and his practice was characterized with much skill and success. In later years he did a larger consulting practice and was frequently called to distant towns. As a citizen, he always took an active interest in public affairs and politics. Always a staunch Republican, and always decisive in his views and not afraid to express them in regard to public questions or politics. He possessed a high and noble character and believed in a clean life, and stood for the best and right thing in life, and was an excellent home and family man, as well as a splendid citizen. In the passing of Dr. Anthony the county lost one of its best citizens, the profession one of its stalwart members. His death came as a pall of sorrow over the whole city and community, and to the bereaved widow, children and relatives the whole community extends its most profound sympathy.

Moved by Dr. Ensign that the report be placed in the archives of the association, and that Dr. Keefer be required to draft resolutions to be acted on at this meeting. Carried.

An intermission of five minutes to select nomination committee resulted as follows: A. E. Owens, Bureau County; S. O. Hendrick, Marshall County; C. C. Hunt, Lee; William O. Ensign, La Salle; A. B. Middleton, Livingston; J. F. Keefer, Whiteside. Putnam, Woodford, Grundy, Kendall and DeKalb no representatives.

The Board of Censors reported the treasurer's report and books to be O.K. Moved and carried that the report be accepted. A recess of five minutes for the nominating committee to get their report ready. Called to order again, and Dr. J. F. Keefer read the following resolutions, which were approved as read. The nominating committee reported as follows: The secretary moved that the name of Dr. Ensign be inserted in place of the name of Dr. Dicus, and that the report be then accepted, which was lost for want of a second. It was then moved that the report be accepted, and that Dr. Middleton, secretary of nominating committee, cast the ballot of the association for the offices named. Carried. The following were declared elected: president, T. W. Burrows; first vice-president, Ezra T. Goble; second vice-president, C. C. Hunt; secretary-treasurer, George A. Dicus. The Board of Censors to be named by the secretary; necrologic committee to be named by the secretary also. Place of meeting, Pontiac.

Moved by Dr. Ensign that the secretary drop the names of those delinquent for five years for dues. Carried. As a result the following names were dropped according to Article VI, Section 4: John F. Crowly, La Salle; Herrick, La Salle; Hathaway, Ottawa; E. F. Milligan, Ottawa; J. J. Pearson, Pontiac; A. C. Purcell, Streator; A. J. Roberts, Ottawa; Sterrett, Marseilles; Stebbings, Marseilles. Moved we adjourn to meet at 6:30 at Elk's Club for banquet. From 6:30 p. m. to 11 one of the most sociable and enjoyable times were had by the association. The local physicians, their wives and daughters and citizens did all in their power, which made things a howling success. The following menu was served: Olives, salted peanuts, celery, roast turkey, potatoes, peas, ice cream, cake, coffee. Dr. C. C. Hunt, toastmaster. Rev. A. A. Manwaring, benediction. Hon. W. B. Brinton,

address. A. E. Owens M.D., on behalf of the North Central Illinois Medical Association. Dr. W. O. Ensign, "The Early Days of the North Central Illinois Medical Association." Dr. C. C. Hunt on behalf of Lee County doctors. Mr. L. W. Mitchell. Prof. W. R. Snyder, "Medical Inspection of Schools." Mr. Harry Edwards, "Expert Testimony." Smith's Orchestra: Orchestra (selected); Miss Orla Stettler, solo (selected); Mrs. W. W. Gilbert, reading; orchestra (selected); Mrs. W. R. Parker (selected); orchestra (selected).

Dec. 6, 1911, meeting was called to order at 9:30 a. m. Members present: Drs. C. C. Hunt, E. S. Murphy, A. E. Owens, C. A. LeSage, E. B. Owens, J. A. Nowlin, William O. Ensign, George A. Dicus, A. B. Middleton, S. O. Hendricks, George Powell, Clinton Ives. The applications of Drs. Clinton H. Ives and George Powell of Dixon to become members were read and referred to the Board of Censors. The report being favorable, it was moved by Dr. Ensign that the secretary cast the ballot of the association for Drs. Ives and Powell as members of the North Central Illinois Medical Association. The ballot was declared clear and the candidates accordingly elected and their names enrolled as members. The following resolution by the nominating committee was read by Dr. Middleton and adopted as read:

Resolved, That we, the members of the North Central Illinois Medical Association present, in this the thirty-eighth annual session, extend a vote of thanks to the local medical profession of Dixon for the painstaking entertainment and the elegant banquet they gave to us, which was so beautifully served by a party of Dixon's fairest young maidens, as well as to thank the city for the use of the council room in the city hall, in which to hold our meetings; to the members of the local Elk's lodge for the use of their beautiful parlors and banquet hall, as well as to the ladies that rendered the readings and musical parts on the program for our entertainment.

A good, hearty, helpful and interesting discussion for the good of the North Central Illinois Medical Association was now indulged in, and some present expressed themselves as having at one time felt that the North Central Illinois Medical Association was a superfluity, but were now thoroughly convinced that it was not only a good thing, but a necessity, as it filled a place and in a way that no other society did. The secretary reported that Dr. A. E. Owens had paid up the amount necessary to reinstate and also $5 in addition, which would make him a life member, and also Dr. C. C. Hunt and the secretary had paid life membership, and that certificates would be issued for next meeting in 1912.

The following amendment to Article II, Section 2, was read and laid over to next meeting for action: To amend Article II, Section 2, Constitution, to omit the last clause, viz., "and must be a member of the county society in the county in which he lives if one exists."

Moved that a vote of thanks be extended to Dr. A. E. Owens for the able way in which he has conducted this meeting. The program being completed, Dr. David S. Fairchilds, C. C. Rogers, E. E. Perisho and M. H. Blackburn having not appeared nor sent any excuse, excepting Dr. Fairchild, and the president-elect not being present for installation, the meeting adjourned to meet at Pontiac, Dec. 3, 1912.

Resolutions on the death of Dr. Frank Anthony were read and acted on as follows:

WHEREAS, In His wise providence it has pleased the Great Maker and Ruler of us all to remove from his field of activity our friend and professional associate; and

WHEREAS, In our association with Dr. Anthony we loved and respected him for his many admirable qualities; and

WHEREAS, We recognized in Dr. Anthony a vigorous, progressive and conscientious practitioner; and

WHEREAS, As a society we recognize the loss of a valuable member; be it

Resolved, That a copy of these resolutions be spread on the minutes of the meeting of this society, and that a copy of the same be tendered his family.

J. F. KEEFER, Committee.

PULASKI COUNTY

The Pulaski County Medical Society met in adjourned meeting at the office of Dr. C. J. Boswell, Mounds, Feb. 6, 1912. The meeting was called to order by the president, Dr. B. A. Royall, Villa Ridge, and after dispensing with the regular order of business, the following papers were read and discussed thoroughly: First, paper on "Diagnosis, Prognosis and Treatment of Pneumonia." Second, paper on "Diagnosis, Prognosis and Treatment of Diphtheria, Opinion as to Quarantining and Best Method," by Dr. C. J. Boswell, Mounds. This was a very interesting meeting and the society started again with renewed energy. The following members were present: Drs. B. A. Royall, L. F. Robinson, W. C. Rife, C. J. Boswell, Otis Hudson, J. F. Hargan, Hall Whiteaker and S. T. Sealy. Adjourned to meet Tuesday, April 2, 1912.

B. A. ROYALL, President. HALL WHITEAKER, Secretary.

ROCK ISLAND COUNTY.

Regular meeting of the Rock Island County Medical Society was held Tuesday evening, Feb. 13, 1912, at East Moline commercial rooms. Minutes of the December meeting were read and approved. The following resolution was adopted:

WHEREAS, The Rock Island County Medical Society has, in the death of Dr. William B. Martin of Sherrard, Ill., met with the loss of a valued member; and

WHEREAS, We appreciated his ability as a physician and his sterling worth as a man and do deeply deplore his passing; therefore, be it

Resolved, That we tender these resolutions to the wife and daughter as an expression of our sympathy, and that the above be spread on the minutes of our society. W. H. LUDEWIG, EMILY WRIGHT, W. D. SNIVELY, Committee.

Dr. C. E. Donahoo, East Moline; Dr. L. C. Moore, Reynolds, Dr. H. J. Smith, Watertown, and Dr. M. C. Hawley, Watertown, were elected to membership. The application of Dr. John A. Rose, Moline, was received. The following bills were allowed: New Harper Hotel, Driffel Printing Co., Ladies' Aid Society, East Moline, suppers and cigars. Dr. William D. Chapman of Silvis then read a paper on "Infant Feeding." This was followed by Dr. Bayard Holmes, Chicago, on "A Certain Disease of the Biliary Tracts and Their Surgical Treatment." Both papers were very entertaining and were freely discussed. A vote of thanks was given to the East Moline ladies and physicians for the excellent supper and entertainment. The meeting was one of the most enjoyable and profitable the society has ever had. Present: Drs. Eddy, Sargent, Rochow, Love, Donahoo, Norman, Hinman, Long, Ellingsworth, Johnson, Leipold, Chapman, Smith, Clarke, Peterson, Williams, Ludewig, Sala, Snively, Seids, Ostrom, Hall, First, Beck, Mueller. Guests, B. Holmes, Chicago; J. A. Ross, Moline; L. W. Littig, Davenport; E. B. Gilbert, Genesco; F. A. Andreen, Orion; Dr. Gamble, Watertown; F. J. Otis, Moline; Dr. Patton, East Moline. ALBERT N. MUELLER, Secretary.

NEWS OF THE STATE

NEWS

—The Galesburg Medical Society elected the following officers: president, Dr. C. E. Quaife; secretary, Dr. E. N. Nash.

—The following are the new officers of the Canton Physicians Club: president, Dr. D. D. Kirby; secretary-treasurer, Dr. William O'Riley.

—The mandamus suit of the National Medical University of Chicago against the State Board of Health for recognition, which was commenced more than a year ago, is now in the Appellate Court.

—The mandamus suit of the Littlejohn College and Hospital against the State Board of Health for recognition as a medical College is still pending in the municipal court and a hearing is expected within the next ten days.

—The officers of the Ottawa Tent Colony have let a contract for new buildings, the cost of which will amount to more than $25,000. These include offices, a research laboratory, a new medical building and an operating room.

—The German ambassador to the United States, Count von Bernstorff, came to Chicago March 24 and delivered an address at the laying of the corner stone for the new building of the German Hospital at Grant place and Hamilton court.

—At the last meeting of the Illinois State Board of Health the certificate of Dr. Charles B. Bateman, Vandalia, charged with impersonating Dr. George B. Carson, Vandalia, in the examination of the Missouri State Board of Health in July, 1911, was revoked for unprofessional and dishonorable conduct.

—Dr. W. B. Wakefield, who has been in general practice in Heyworth, sailed for Vienna, March 2, to take up the study of dermatology. He expects also to do laboratory work at London, after clinical experience in other European cities. Mrs. Wakefield accompanies him and they expect to spend between one and two years abroad.

—At the third annual dinner of the Society of Medical History of Chicago, held at the Auditorium Hotel, March 15, Dr. Henry B. Favill spoke of the early medical days of Wisconsin, and Dr. Mortimer Frank of medicine as described in English literature before the eighteenth century. There were eighteen members present.

—A new branch emergency hospital at the Chicago Avenue Police Station was formally opened to the public March 12, 1912, in rooms on the first floor to the west of Municipal Judge Maxwell's court. They have been fitted up at a cost of $800. There are four beds and an operating room. The hospital is equipped with an oxygen generator and appliance for "first aid to the injured." It will be in charge of Dr. Alvin G. Helwig, ambulance surgeon.

—Dr. Milton J. Roseneau, professor of preventive medicine and hygiene in Harvard University, will deliver a course of lectures at the Northwestern University in Evanston, from April 15th to 20th, on "Milk and its Relation to Public Health." The public will be admitted free to these important lectures. The program of the lectures is as follows:

1. The Milk Question, April 15, at 8 p. m.
2. Dirty Milk, April 16, at 8 p. m.
3. Diseases Spread by Milk, April 17, at 8 p. m.
4. Clean Milk, April 18, at 8 p. m.
5. Pasteurization, April 19, at 8 p. m.
6. From Cow to Consumer, April 20, at 8 p. m.

—The management of the Hospital of St. Anthony de Padua, West Nineteenth street and Marshall boulevard, has issued its annual report for the year 1911, from which it appears that during the past year 1,874 patients have been treated in this hospital. Of these, 1,656 recovered, forty-two improved, fourteen did not improve and 162 died. Characteristic of the population of Chicago are the nationalities of the patients treated. Fourteen different nationalities were represented, as follows: American, 1,101; German, 119; Irish, 152; Bohemian, 116; Austrian, 103; Italian, 103; Russian, 60; Canadian, 21; Polish, 78; Norwegian, 6; Swedish, 21; English, 15; Greek, 21; French, 10. This hospital is under the direction of the Franciscan Sisters of the Sacred Heart of Jesus, of Joliet. During the past year a new addition has been opened providing beautiful accommodations for 136 patients.

PERSONAL

Dr. B. Barker, Beeson, sailed for Europe March 19.

Dr. J. W. Pettit, Ottawa, sailed for Europe March 14.

Dr. E. A. Hall, Henry, fell March 3, fracturing his patella.

Dr. C. S. Nelson, Springfield, is ill at St. Johns Hospital, with appendicitis.

Dr. E. W. Wahl, Tampico, slipped on a piece of ice March 7, fracturing his leg just above the ankle.

Dr. P. J. H. Farrell, Chicago, has been elected president of the newly organized Army and Navy Club of Chicago.

Dr. George C. Hunt, chief surgeon of the Chicago Police Department, has been elected a director of the Amicable Accident Association.

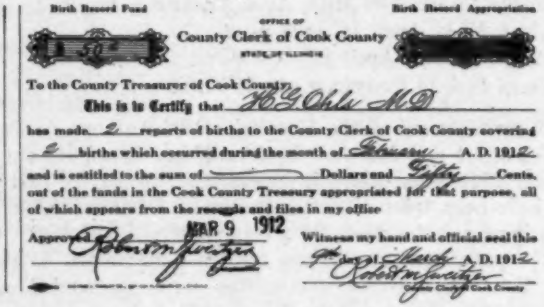
Dr. Stanley Castle of Springfield, is spending a few weeks with relatives at Alton before going south to look after his farming interests.

Dr. J. W. Dal of Chicago, has gone to West Olive, Mich., to recuperate after a surgical operation.

Dr. Alvin Helwig, city ambulance physician at Chicago Avenue, was scalded on the head and neck recently by a cup of hot coffee thrown on him by a prisoner in the station.

PUBLIC HEALTH

—Since County Clerk Sweitzer announced to the profession that funds were available for recording births and asked for bills, his office has been swamped by claims. At the present rate the appropriation of $5,000 will be exhausted within a few months. The following cut shows the first



Birth Record Fund — Birth Record Appropriation

OFFICE OF
County Clerk of Cook County
STATE OF ILLINOIS

To the County Treasurer of Cook County:

This is to Certify that H. L. Ohle M.D.

has made 2 reports of births to the County Clerk of Cook County covering 2 births which occurred during the month of February A. D. 1912 and is entitled to the sum of _____ Dollars and Fifty Cents, out of the funds in the Cook County Treasury appropriated for that purpose, all of which appears from the records and files in my office

Approved MAR 9 1912 Robert M. Sweitzer

Witness my hand and official seal this 9th day of March A. D. 1912

Robert M. Sweitzer
County Clerk of Cook County

voucher issued. It is estimated that there have been 445,000 births in Chicago since the law was enacted in 1903 providing payment for recording births.

—Last month forty-two nurses out of the staff of 245 at the Cook County Hospital were ill with contagious diseases. The staff is said to be too small to take care of all the patients and their resistance to infection is reduced by long hours and hard work. It is said that practically all the nurses were compelled to work twelve hours a day, although it is illegal to work more than eight hours a day. Dr. Baum, chief of staff, attributed the trouble to a number of diphtheria carriers among the nurses who required to be isolated. He also called attention to the fact that among more than 800 cases that have occurred among the nurses during the past eighteen years there has never been a death from uncomplicated diphtheria. He said there was need for at least 20 per cent. more nurses than are at present employed. More room for scarlet fever cases is also badly needed, and the voters of the city will be called on to vote for bonds to provide for a new hospital.

—An epidemic of typhoid has followed a dance recently held in St. Charles, where more than thirty cases are reported.

On March 4 the Council passed a very important ordinance, one of the most important ordinances passed in a long time.

Under it every physician and midwife must report to the Health Department within 24 hours the occurrence of every case of sore eyes developing within 7 days after birth.

The penalty for failure to report is a fine of from $5.00 to $25.00.

We hope we may soon be able to take the next step and supply the nitrate of silver drops for use in all cases in which they cannot be otherwise provided.

There are 60,000 blind persons in the United States.
At least 20,000 of these sad cases were Preventable!
IF CHICAGO WILL ENFORCE THE USE OF
-THIS-
SILVER NITRATE SOLUTION
THE MEDICINE DROPPER
"THE DROPS"
IT WILL COST
-THIS-
FIVE CENTS
AND PREVENT
-THIS-
To Lose one's SIGHT is Like Losing LIFE itself.
SAVE YOUR BABY'S SIGHT
Chicago Department of Health - Educational Series No. 9

From the Bulletin Chicago Department of Health.

REMOVALS

Dr. J. G. Meyer of Lincoln, has located in Springfield.

Dr. L. C. Bassett of Farina, has removed to Effingham.

Dr. D. W. Matthaei of Chicago, has removed to Arco, Ida.

Dr. Weisenhorn has removed from Quincy to Teutopolis, Ill.

Dr. J. W. Dale has removed from Vernon to Walnut Hill, Ill.

Dr. W. W. Kuntz has removed from New Salem to Baylis, Ill.

Dr. P. I. Cromwell of Effingham, has removed to Arcadia, Neb.

Dr. Elsie B. Menott has removed from Princeville to Boulder, Colo.

Dr. H. R. Sword has removed from Freeport to Milledgeville, Ill.

Dr. P. I. Cromwell of Effingham, has removed to a farm in the state of Nebraska.

Dr. C. D. Hoy has removed from 3530 Lake avenue, Chicago, to Wellston, Ohio.

Dr. Esther E. Sandus has removed from 2053 Augusta street, Chicago, to Van Wert, Ohio.

Dr. F. W. A. Hoffman has gone to Florida to spend several weeks, and on his return will locate in Effingham.

Dr. Stephen A. Hemmi has removed from 2922 Humboldt boulevard, Chicago, to 2611 West Division street, Chicago.

Dr. John N. Bassin of New York City, has located at Virdin, Ill., where he will engage in the practice of medicine.

Dr. F. W. Kerchner has removed from Glen Carbon and is now located at Prairietown, where he has rented Dr. Engel's office.

Dr. Hugo Lindig of Granville, is reported to be mysteriously missing since November. He was last seen in Cherry on the occasion of the second anniversary of the mine disaster.

DEATHS

LEE MCCAULEY, M.D., a well known physician who formerly practiced at Alton, died at Hardin, February 21.

WILLIAM H. GEDDY, M.D., a graduate of University of Wooster, 1885, died at Nokomis, Ill., March 18, 1912, aged 89 years.

SUCHER DROZDOWITZ, M.D. (license to practice, Illinois, 1892); died at his home in Chicago, February 21, from angina pectoris, aged 54.

LEE MCAULEY, M.D., a graduate of the University of Missouri, 1898, died at his home in Hardin, Ill., February 21, 1912, from acute nephritis, aged 48.

ALICE C. BELLOWS, M.D., Bennett Medical College, Chicago, 1895; died at her home in Chicago, February 14, from chronic interstitial nephritis, aged 50.

CHARLES G. RAYBURN, M.D., of Kewanee, Ill., widely known among Illinois Elks, died recently in Colorado Springs, Colo., of tuberculosis. Burial was at Roseville, Ill.

EDWIN GLOVER MOREY, M.D., Chicago Homeopathic Medical College, 1886; formerly of Rock Island and Oak Park, Ill.; died in Florida recently from influenza and was buried at Rock Island, February 16.

ANDREW HULL PARKER, M.D. (license, Illinois, years of practice, 1883), of Evanston; for forty-five years a practitioner of Chicago; died in the Evanston Hospital, February 29, after a surgical operation, aged 77.

JAMES H. HEWITT, M.D., University of Buffalo, New York, 1865; surgeon of the One Hundred and Forty-Seventh Pennsylvania Volunteer Infantry during the Civil War; for more than forty years a practitioner of Summerfield, Ill.; died at his home in Lebanon, Ill., February 25, aged 71.

REGAY LESLIE BAKER, M.D., Kentucky School of Medicine, Louisville, 1893; Jefferson Medical College, 1894; a member of the American Medical Association; coroner of Peoria County, Ill., from 1904 to 1908; died at his home in Peoria, February 14, from the effects of a gunshot wound of the head, self-inflicted, it is believed, with suicidal intent, while temporarily insane, aged 40.

J. T. PURCELL, M.D., died at St. Joseph, Champaign County, Sunday, March 10, in his 68th year. He was born in Ohio, served in the Eleventh Ohio Cavalry for nearly six years, completing the longest period of volunteer service of any resident of Champaign County. He graduated from the Indiana Medical College, Indianapolis, in 1869, and has practiced in St. Joseph for thirty-five years. The funeral was in charge of the Ogden Masonic Lodge, and the Champaign County Medical Society was represented at the funeral.

Book Notices

PELLAGRA. By George M. Niles, M.D., Professor of Gastro-enterology and Therapeutics in the Atlanta School of Medicine, Atlanta, Georgia. Octavo of 253 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1912. Cloth, $3.00 net.

Dr. Niles in this thoroughly practical common sense talk on the disease newly discovered in America, has done a great service to the profession and people, and one which we hope will be amply rewarded by a large sale of the book. He candidly states his position and the limitations on the subject in the following language: "I have no apology to offer for expressing my candid opinions and firm convictions. Should subsequent experience and knowledge convince me that I have fostered error, I shall be the first to announce it and make the necessary amends. No advancement has ever been made except by following a new idea to an established fact, and in the light which is now guiding me I can see no incorrect premise nor any false conclusions; yet I do not expect the approbation of all whose opinions I court and whose words I respect.

"To go forward and not backward in the management of this threatened scourge will require much clinical observation, much laboratory labor, special technic in the examination and treatment of the various phases of pellagra, a practical knowledge of physiology and physiologic chemistry, the medical uses of special drugs, baths, waters, and electricity, and, with it all, time and patience.

"It will be most interesting a few years hence to look back in a retrospective manner on the efforts of to-day, on the possibly erroneous viewpoints with which we have considered pellagra, and our somewhat halting footsteps in its therapeutics. We are glad in this connection however, to lay to our souls the flattering unction that our efforts are at least sincere and justified by present results."

He dedicates it to the medical profession offering it for what it is, and not claiming that it speaks the "last word," but that it represents the labors of a student who is endeavoring with a spirit of courage and optimism to contribute a worthy portion to the sum total of our information concerning pellagra, this American problem.

Practical Electro-Therapeutics and *X*-Ray Therapy. With chapters on Phototherapy, *X*-Ray in Eye Surgery, *X*-Ray in Dentistry, and Medico-Legal Aspect of the *X*-Ray. By J. M. Martin, M.D., Containing 219 Illustrations. C. V. Mosby Company, St. Louis, 1912. Price, $4.00.

This work of Dr. J. M. Martin of Dallas, Texas, appears to be a work based on actual clinical experience, and thoroughly practical in every detail. The following extract from the introduction by the author represents in brief the theory of its product, and the aim of the author in placing it before the medical world:

"If electricity is to be of value as a therapeutic agent, we must be so thoroughly conversant with our currents and their physiologic effects as to be able to supply the particular current or currents in such a way as to relieve the abnormal condition. This is not so hard as it appears on first thought. Electricity, as a therapeutic agent, will probably reach its acme in the treatment of diseases of the nervous system. It is the aim and ambition of the author to so present the subject in this volume that the student who really wants to master the subject of this young but important specialty may thoroughly grasp the basic principles, and be able to apply electricity as a powerful weapon against the many diseases and human infirmities from which our people are continually suffering."

We can heartily recommend the work as being just what the ordinary practitioner will need in his daily practice.